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An index to the ninety-sixth volume of THE RAILWAY GAZETTE *covering the issues from January 4 to June 27, 1952, has been prepared, and is now available free of charge on application to the publisher*

Revising the Transport Bill

VERY shortly the Government is expected to make known the outcome of the views and impressions it has gained in recent weeks on the Transport Bill. There seems little doubt that it is prepared to undertake some modification of its first and rather hurriedly-prepared proposals. Mr. Alan Lennox-Boyd, the Minister of Transport, stated during the Conservative Party Conference at Scarborough that the Transport Bill was undergoing modifications and that, when presented to the House, it would differ in some respects from the one already published. Moreover, he expressed the willingness of the Government, as indeed he has done on previous occasions, to consider both inside and outside Parliament any practical suggestions which are supported by trade and industry. Mr. Lennox-Boyd has also been engaged in a number of discussions within the transport industry, and there can be little doubt that by now he is in possession of a vast amount of information additional to that available to the draughtsmen of the original Bill. Not the least valuable information secured by the Minister during the last month or two has been derived from talks in all the Regions of British Railways, as well as at Headquarters, in which pains have been taken to explain to him the background against which railway operations are conducted. By now Mr. Lennox-Boyd will have the advantage of understanding a great deal of the atmosphere which is so essential a part of the industry. Much that he has learned should find its implementation in the scheme for the organisation of the railways, which is to come later, rather than in the Bill itself, but it is essential that the Bill should be so drafted as to make possible the production of a reasonable and practical scheme. It is at least clear that it is the Minister's intention that the railways should be placed in a much more competitive position in the matter of charges. That is a basic requirement of any legislation which can hope to be successful. The organisational changes, although perhaps secondary to those affecting charges, nevertheless may play a vital part in revivifying the railways.

East African Railway Achievements

REFUTING allegations made recently in a national newspaper that much of the equipment of the East African Railways is obsolescent and that little more is envisaged than repair or replacement of existing facilities, Mr. A. Dalton, General Manager of the system, has given some figures which sufficiently dispel such an erroneous impression. He shows that the administration's renewal fund is well able to finance all new equipment when it is required. The principal difficulty, he says, is the time-lag between the placing of orders and the delivery from manufacturers. Since the war, the system has received 71 steam and 18 diesel locomotives, and 2,100 units of rolling stock. On order from the United Kingdom are 63 Beyer-Garratt, 83 Mikado and 55 shunting locomotives, 4,865 units of rolling stock, and 148 units of coaching stock; the total value of orders is nearly £19,000,000. As on other systems the war compelled some equipment to be kept in service longer than would otherwise have been necessary, but there is no question of obsolescence and all vehicles are well maintained. On formation in 1948, the East African Railways took over from the two constituents some 226 locomotives, 575 coaches and 5,694 wagons. Since then, traffic has constantly increased; in 1951, for instance, passenger journeys were 10 per cent more than in 1950. For this reason, therefore, and not because of any need for wholesale replacement, large orders have been placed.

New Construction in East Africa

IN addition to the increase in traffic on existing lines, there has been much new construction in East Africa during the last three or four years. In Tanganyika some 243 miles have been added to the system, and further extensions are in hand. The first 45 miles of a 210-mile extension of the Kenya—Uganda main line into Western Uganda are nearing completion. Over 237 miles of this main line in Kenya have been relaid with heavier rail and a much larger relaying programme has been sanctioned. Important harbour works have been completed or are in progress, large staff housing schemes are being undertaken, more crossing loops have been opened, and many other improvements to way and works are being carried out. Such a list of aims and achievements is at once proof of the ability of the East African Railways & Harbours administration to meet all contingencies, despite the pace of present and projected development in the territories which it serves.

Development of the Road Haulage Executive

THE impossibility when the Road Haulage Executive was formed in 1948 of knowing how many undertakings and vehicles eventually would be acquired, the despatch and absence of litigation with which British Road Services were brought into being, and the elasticity and economy of manpower practised in their organisation are points which emerge in a paper read on October 8 by Mr. G. W. Quick Smith, Secretary & Legal Adviser of the Road Haulage Executive, to the Southern Section of the Institute of Transport. The functional organisation of British Rail-

ways was not adopted; the R.H.E. makes each Manager at Division and District level generally responsible for all the activities within his sphere, the chain of responsibility running to the Executive with appropriate technical and functional assistants at each level. At the peak of the acquisition programme businesses were being acquired at the rate of ten a working day; in the circumstances it was creditable there was as much co-ordination of services with British Railways as proved possible in the face of many difficulties, not the least being the opposition of some trade union members. Mr. Quick Smith shows the difficulty of formulating, in the prevailing inflationary trend, a comprehensive rates structure, with the tendency for the more profitable traffic to be diverted to competitors or "C" licence vehicles. The citation of "C" licence vehicle statistics as evidence of the inefficiency of British Road Services is open to challenge, he suggests, as nearly three-quarters of the increase took place before the R.H.E. was formed.

Overseas Railway Traffics

AS a result of an £866,000 advance in gross earnings, Canadian Pacific Railway net earnings for August rose by £654,000 to £740,000. The increase in working expenses for the month, which amounted to £212,000 at £12,213,000, was a quarter of the improvement in gross earnings. Aggregate net earnings for the 35 weeks since January amounted to £5,233,000, an improvement by £872,000 over net earnings for the equivalent period of 1951. Gross earnings for the same period were £7,048,000 higher at £100,059,000. Gold Coast traffics for August made a £32,678 advance to £253,854, and on the aggregate, receipts for 21 weeks were up by £152,894 at £1,434,206. During June Salvador traffics fell by c81,000 to c169,000 and aggregate receipts for the financial year 1951-52 showed a deterioration by c49,000 to c2,068,000.

Evolution of Industrial Design

THE attention given to industrial design since the war has made it seem to some that the principle is a new one. It would be more accurate to say that what is new is the study and analysis of the elements of design, which itself has evolved naturally. There have, of course, been good and bad examples in the past. The design expert recognises and selects what is best in the work of previous designers and builds on this foundation. Quoting some specimens of the natural and successful development of design in an article in *The Times Review of Industry*, Mr. R. Dudley Ryder mentions the "Castle" class locomotive of the Western Region as representing a triumph achieved by industrial design. In the "indefinable aristocracy of proportion in boiler, cab, and wheels," and the "characteristic and vigorous lettering of nameplate and engine number," he finds an assured good taste and integrity. The *Caerphilly Castle* is illustrated in the article with the comment that it exhibits the natural dignity and grace achieved by building an honest machine to the highest mechanical standards. The function of the industrial designer, therefore, is not so much to achieve new forms as to encourage the following of good examples.

The Harrow & Wealdstone Accident, L.M.R.

THE hope that 1952 would prove to be a good year from the point of view of train accident casualties has been extinguished by the disaster at Harrow & Wealdstone Station, L.M.R., on October 8 which caused 111 deaths—among them many railway staff travelling to work—and a very large number of serious injuries. It was exceeded in that respect in the United Kingdom only by the troop train accident at Gretna, Scotland, on May 22, 1915. Both cases involved a second collision arising from the impossibility of stopping an express which was approaching on the adjacent line, but whereas fire broke out at Gretna and raged for many hours, that complication fortunately was not added to the great destruction done at Wealdstone. After Gretna it was at once made clear that the accident had originated in particularly gross carelessness in the signal box, which led to a shunted train being overlooked. The Wealdstone accident, of which the circumstances were given in our October 10 issue, has profoundly moved the public by reason of the unusually grave loss of life and damage to material. It has not yet been established why the sleeping car express from Perth ran into the local passenger train which had been crossed from the slow line, and was just leaving the station to run fast thereafter. Lt.-Colonel Wilson's inquiry into the accident opened in the Board Room at Euston Station on Wednesday.

Planned Acoustics for Stations

COMPLAINTS that train announcements on station loudspeakers are unintelligible are sometimes levelled unjustly at announcers and the apparatus they use. The trouble may lie with the structural design of the station in which various features can result in travellers hearing speech coming from several directions at once and out of phase by a fraction of a second. In such circumstances it may be necessary to use several types of loudspeakers in one installation, and to plan their positioning with special care. In one method of reproduction, described in our February 15 issue, announcements are recorded as made on magnetic tape, and are reproduced by several play-back heads arranged to give a fractional delay between different groups of loudspeakers, so that at any point in the station all are heard simultaneously. Another approach is to remove the source of echoes by modern acoustic technique. An example of how this can be applied to an existing building is seen in the Cleveland Union Terminal, U.S.A., where 3,744 acoustical tiles have been applied to a glass skylight, once a source of echoes in the main concourse. Tape recordings were used to compare the reproduction before and after the tiles were applied. For new work, acoustical properties clearly have as strong a case for consideration by architects as problems of lighting.

Another 50-Cycle Electrification

THE decision to electrify the Montenvers rack railway on the 50-cycle single-phase system (referred to in the Contracts & Tenders section of our October 3 issue), will provide a good test of the method under quite new conditions. Though steep for a principal secondary line, the grades of the Aix—La Roche line in France are not really severe. On the Höllental line, in the Black Forest, ruling grades of 1 in 18 are worked by adhesion with old-type 50-cycle locomotives, and new types are being developed. The Montenvers line, patronised by thousands of Chamonix holiday-makers, operates with gradients of 1 in 8½ on lower sections and as much as 1 in 4½ (22 per cent.) on some of the higher sections. The contract for conversion placed with Oerlikon comprises a substation at Chamonix, overhead lines for the 5 or 6 km. track, and four steel motor coaches of bogie form with all four axles driven and all driving on the rack. The motor coach will always operate at the bottom end of the train, pushing the ordinary coaches upwards, a practice followed with the existing steam traction. Horsepower of a motor coach will be 600, a figure much above that of the steam rack locomotives. Trains of a motor coach and one or two ordinary coaches are proposed; but consideration is being given to a combination of a motor coach and two light-weight bogie coaches. This, and the higher uphill speed, would considerably increase line capacity above present level.

Four Months a Year Operation

THERE is another economic aspect in which this electrification of the Montenvers rack line merits close observation. Hitherto, it is probably true to say, no railway which is open only three to five months in the year can hope to make sufficient profit to pay for electrification. Can the 50-cycle system change this? It is unlikely that any other system can. In the case of the Montenvers line it would seem that lower operating costs must be the

principal attraction. There can not be so much hope for greatly increased traffic; for already pretty well everyone who goes to Chamonix goes up to the Mer de Glace at some time or another during their stay; and we have heard of no case where a tourist has been unable to go up because of constant overcrowding. There is no question that the convenience of operation will be enhanced considerably by the use of motor coaches and trailers of light and airy type, such, for example, as those on the Rigi and Uetliberg lines; and the speed uphill will probably be increased, though that will not necessarily be popular with travellers. One can only hope that the conversion will be so successful as to encourage the conversion of the adjacent St. Gervais-Chamonix-Vallorcine line of the S.N.C.F. from the present low-voltage d.c. with antiquated equipment to the 50-cycle system and modern stock.

Southern Colour-Light Signalling Extended

THE bringing into use this week of the second portion of the second stage of the colour-light signalling programme which the Southern Region has had in hand for some time, in order to complete the work on the main line from London to Brighton, extends modern equipment to a section carrying dense traffic which has been worked for about 50 years by the Sykes block, with great freedom from accident. Just before the 1914 war the Brighton company was planning a considerable increase in the train service along this route and new signal boxes were erected at the north ends of Wandsworth Common and Balham stations, between Norbury and Thornton Heath, and between there and Selhurst. The block apparatus was ready to be fitted when the war came, and in the end the boxes were never brought into use. Some colour-light signals were, however, eventually installed by the Southern Railway to give facilities which one of these boxes would have provided. The present work terminates at the area controlled by the large Gloucester Road Junction box, which regulates a particularly complicated layout of lines. This, with nearby junctions, will come into Stage 3 of the work. In these extensions the Southern Region continues to follow principles to which it has adhered for a long time and which have been found to meet its requirements very satisfactorily, although improvements have been incorporated in the design of certain details of the apparatus, as shown by our article on page 434 in this issue.

More Expenditure on Transport Needed

THE need for a far larger proportion of the nation's total capital expenditure being devoted to transport was strongly argued by Mr. C. T. Brunner, a Director and General Manager of Shell-Mex & B.P. Limited, in his presidential address to the Institute of Transport last Monday. He also argued that the transport industry could offer a better return on capital investment than most of its rival claimants. If its needs for a greater investment were met it could justify this in the interests of greater national productivity. There had been no admission of transport to its proper place as an essential element of British industry, accounting for no small part of the total cost of every article produced. In a recent paper to the Royal Statistical Society, it was shown that inland transport, excluding dock charges and warehousing, accounted in 1950 for £1,600 million, or 14 per cent of the total value of all goods and services produced in Great Britain. Of this sum, £775,000,000 related to the transport of goods and £825,000,000 to the transport of persons.

Some of the contrasts which were put forward by Mr. Brunner lend weight to the argument which we have stressed on numerous occasions since capital investment in railways was first restricted by the Treasury soon after the war. He supports the contention we have advanced that without a constant inflow of new capital into the industry it is impossible to maintain, let alone to increase, efficiency in a basic industry which has its reactions throughout the whole sphere of British commerce. He pointed out that housing had absorbed more capital than the whole of export industry and had received it at a much lower rate; housing, schools and electricity supply together claimed more capital last year than the whole of manufacturing industry. He made a very pertinent point, too, when he claimed that government enterprises were given access to capital supplies but were not permitted to adjust their charges so as to render this preference unnecessary. Obviously the matter of better treatment of transport so far as its capital needs are concerned must rest ultimately with government, but Mr. Brunner rightly stressed that there was a need for initiative on the part of those immediately concerned "to want, indeed to determine, to undertake the needed expenditure." So far as the railways are concerned there can be no doubt of the desire of those responsible for their management to embark on substantial capital schemes which would be reflected in increased efficiency. Many of the plans for developments of this kind have been in being for years; they have been held up only by restrictions imposed by the Treasury. Government policy in this respect has been implemented loyally, but not without a great deal of misgiving, by practical railwaymen.

It has become almost platitudinous to say that all the four principal forms of transport are complementary and that all are needed. The difficulties arise, not from the fact that some forms are needed and some are not, but because their rates of technical progress are not the same. Forms of transport which, because they are of relatively recent origin, have a rapid rate of technical improvement, look for an expanding sphere of activity, partly at the expense, at any rate proportionately, of the older forms of transport. Co-ordination must imply an orderly process under which forms of transport with a high rate of technical progress expand, while those with a low rate of progress correspondingly contract their spheres of usefulness.

In freight handling, productivity per man employed is highest where the volumes moving at one time are large, the units in which they are moved are correspondingly large, handling is minimised, time schedules are dependable, and the size of the individual delivery to the consignee is the maximum possible. The savings from large-scale movement are so great that it is worthwhile, more so than is usually reflected in the freight rate, to give substantial financial inducements to the consignors to bring the traffic forward in the quantities which are the most economical to handle. Capital expenditure is justified on whatever equipment may be needed for large-scale handling, including particularly equipment for mechanical handling at terminal depots, the provision of depots with enough space for the task, large units in which goods can be transported, and sufficient storage facilities at the consignee's end to enable big deliveries to be taken. So far as passenger traffic is concerned, bulk handling is also the most economical, but a balance must be struck between frequency of service and the economy possible from large-scale movement. Commercial passenger transport must always be devising ways and means of bringing closer the two requirements of mass movement and reduction in waiting and journey times.

The railways, alleges Mr. Brunner, have the problem of an elderly fleet of locomotives and of antiquated rolling stock, a need to strengthen their permanent way and perhaps particularly bridges; there is great scope for the extension of modern signalling methods. Continuous brakes on all freight wagons would reduce substantially the difference in speed between passenger and freight trains and quicken the tempo of rail movement.

Achievement of increased productivity on the railways is not merely a question of minor improvements to the present system, but of fundamental changes comparable to the construction of motorways for road transport. The electrification of the lines serving areas, particularly suburban, south of London, pointed the way to increased traffic and paid a handsome dividend at a time when railway passenger traffic as a whole was declining. Similar results were obtained by the extension into the outer suburbs of the electrified system now operated by the London Trans-

port Executive. There is ample scope for the same kind of developments in other districts and in other densely-populated parts of the country. With the growth of road traffic, the congestion in and about the great cities places a premium on a form of transport which is rapid, clean, and, with automatic signalling, less subject to dislocation by climatic factors, such as fogs. The saving in the passenger's time which can be afforded by a fully electrified railway system, with its ability to give frequent service, is in itself an important contribution to the productivity of the working population as a whole.

Outside the densely-populated areas and between them there is scope for a re-assessment of the advantages of the diesel locomotive for main line work, in conjunction with small diesel locomotives for branch lines. Dirt, noise and the frequent obliteration of the landscape by smoke are perhaps the greatest handicaps the railways suffer in their efforts to attract passengers. Diesel locomotion has the advantage of a saving in manpower, as it eliminates the handling of coal, and its great tractive power makes possible the hauling of heavier trains at high speeds. It can make a great contribution to the solution of one of the recurring postwar shortages, that of coal. The railways consume 14,000,000 tons of coal annually; on the hypothetical assumption that they were wholly converted to diesel traction, the equivalent requirements of diesel oil would be under 2,500,000 tons. This would render unnecessary the further import of American coal by Britain and, if more British coal were exported to Western Europe, would make a great contribution to European prosperity by enabling European countries to substitute this for American coal.

The substitution of diesel traction for steam locomotion gives, according to Mr. Brunner, a ratio of some six tons of coal saved for every ton of oil, which compares favourably with most alternative uses of oil; for steam locomotion, for instance, the substitution of oil for coal saves only 1½ tons of coal for every ton of oil.

There are perhaps two other directions of outstanding importance in which greater productivity can be achieved by the railways through alterations in equipment. Improvements can be made in the terminal services for freight traffic, particularly in handling, where there is scope for greatly extended use of mechanical aids; changes in the layout of depots would also offer advantages, for example, by facilitating the transfer of goods from rail wagons to road vehicles and thereby reducing the waiting time of both the transport units and the goods in transit. Duplication with road transport can be eliminated by the more rapid closing of small stations and the less important branch lines.

Electrification Developments in France

FOR four years the progress of the Paris-Lyons electrification and the experiments with single-phase, 50-cycle traction in the Savoy have been followed with keen interest in this country and elsewhere. The opportunity to examine these developments on site was therefore particularly appreciated by all who participated last week in the tour of French railway installations and hydro-electric plants organised by the French National Railways. Throughout the visit, which took the travellers nearly as far south as Avignon, operating and technical officers of the S.N.C.F. and the Compagnie Nationale du Rhône were tireless in satisfying inquirers whose interests ranged from reception centres at large stations for mothers travelling with infants in arms, to the problems of commutation in 50-cycle motors.

The occasion for the visit, which is reported elsewhere this week, was the introduction on October 5 of the first new timetables since electrification was completed to Lyons on June 24. Among the changes has been the acceleration of the "Mistral" express between Paris and Lyons by 26 min., giving an average speed for the 318 miles of 75 m.p.h., including one stop, a world record for such a distance at present. It must be acknowledged, however, that whether with electric traction, or behind a "Liberation" 2-8-2 threading the valleys towards Culoz, or running down the Rhône from Lyons to Bellegarde with a P.L.M. Mountain, or in the Calais boat train worked by a Chapelon Pacific, there was frequent comment on the rapid acceleration and sustained speed for long periods. It was typical of the pains taken to enable the visitors to see the latest in French transport practice that the return crossing from Calais to Folkestone was made by special arrangement with British Railways in the French Railways cross-Channel steamer *Côte d'Azur*, which had completed its normal quota of sailings in the previous week. On this occasion the party was received by M. Vernalde, Manager of the steamship operating company at Calais.

So far the Paris-Lyons electrification has not reached the marshalling yards at Chasse, south of Lyons, but has been taken beyond Perrache Station to the Lyon-Mouche depot where Bo-Bo locomotives are stabled. Goods trains from the yards are worked by steam locomotives to St. Germain au Mont d'Or, by-passing the city to the west, and are taken forward by electric traction. Only a very limited number now follows the Bourbonnais line. Passenger trains *via* the Bourbonnais complete the journey into Paris behind electric locomotives from Moret. In the course of their journeys the visitors saw work beginning on the erection of standards for the overhead line through Lyon-Brotteaux towards Ambérieu. It is hoped that the Macon-Bourg-Ambérieu, Lyons-Ambérieu, and Ambérieu-Culoz lines will be electrified in two years' time. At the same period the 50-cycle system should have been extended from its present terminus at La Roche-sur-Foron both to Annemasse and to St. Gervais-les-Bains, and the Valenciennes-Thionville project should be well under way. Next January it is expected that the Bo-Bo-Bo motor-generator locomotive will have joined the other prototypes on the La Roche line.

Four types of single-phase locomotives are planned for Valenciennes-Thionville, and will include a new approach to the 50-cycle problem in the shape of a machine with three-phase traction motors supplied through a phase-converter with a continuously variable output frequency. Present plans envisage 20 locomotives of this type, 65 with motor-generators, 15 with 50-cycle motors, and 5 with ignitron rectifiers.

The opportunity given the visitors last week of riding in the cab of 50-cycle locomotive No. 6051 from Aix-les-Bains to Annecy, showed the practical use to which the dual-current equipment of this and the other prototypes on this route is being put, for it enables them to work through trains on to the branch out of the main-line platform at Aix, where the supply is 1,500 V. d.c. All have achieved lengthy mileages without major attention. Some vibration is experienced with No. 6051 when starting, and it is intended to modify the motor suspension when a general overhaul is undertaken. Incidentally this effect was not noticeable when pulling out of Aix on the 1,500 V. d.c. system.

Two days were spent in visits to the hydro-electric installations of the Compagnie Nationale du Rhône, in which the S.N.C.F. holds 25 per cent of the shares. The connection between these undertakings is aptly expressed in the words of M. Edouard Herriot inscribed on the medal commemorating completion of the Paris-Lyons electrification: "Yesterday free and tumultuous; today harnessed but not quelled; the Rhône contributes proudly to the triumph of the iron road and the progress of humanity." To complete their tour the party returned to Paris on the 9 a.m. from Lyons, which is allowed 2 hr. 37 min. for the 195·7 miles from Dijon to the Gare de Lyon. On this occasion, leaving Dijon 5 min. late after detaching a steam-heating vehicle, the run was made by the new Co-Co locomotive No. 7101, hauling 717 *tonnes*, in 2 hr. 28 min., or 6 min. less than the timing of the "Mistral" express. The 9 a.m. up, and its return working from Paris at 6.25 p.m., allow the Lyons businessman nearly 5 hours in the capital, providing a service typical of the speed, convenience, and punctuality made possible by the great work of electrification now completed, and achieved day in and day out with loads ranging between 600 and 900 *tonnes*.

Transport Users' Consultative Committees

THE impending debate in the House of Commons of the Transport Bill, with its enhancement of the status of the Transport Users' Consultative Committees for Scotland and Wales and its extension of the jurisdiction of consultative committees to bus services provided by companies controlled by the British Transport Commission, increases the topical interest of the subject, comprehensively dealt with by Mr. M. A. Cameron, Principal Traffic Officer of the B.T.C., in his paper read on Wednesday to the Beds. Cambs. & Hunts. Section of the Institute of Transport.

In view of the present activity of the Central and Area Transport Users' Consultative Committees, it is strange that the Joint Conferences covering 28 areas of England and Wales which grew out of the Railways Act, 1921, did not last long. Mr. Cameron points out that most faded away after functioning for a year or two, though four continue to meet regularly and are a useful adjunct to the organisation of Area Consultative Committees set up under the Transport Act of 1947. Thus there was an attempt to provide for regular and official consultation with the railways over 30 years ago. The railways themselves at first felt that the existing relations between their commercial officers and customers were close enough to make official consultative machinery unnecessary, but did not oppose the traders' expressed desire for such machinery. The creation by the Act of 1947 of a public monopoly of railway transport was felt to make adequate consultative machinery essential.

Discussing the composition of the eleven existing Area Committees (including the Consultative Committee for London) Mr. Cameron explains the problem of representation of the B.T.C.; the general position is that the Commission has only two representatives, so that representation must be allocated with regard to the predominant transport responsibilities in each Area. The Railway Executive has one representative on each committee, whilst the other is appointed from another Executive having regard to local circumstances. In London it was essential for the London Transport Executive to be represented; in the North East and East Anglian areas, where road transport Area Passenger Schemes were at one time proposed, the second B.T.C. representatives are from the Tilling Group bus companies serving those areas; in South Wales, with its important docks, the Docks & Inland Waterways Executive provides the second representative; and so on. As the areas are not co-terminous with the Regions of British Railways, the railway representative varies, being sometimes the Chief Regional Officer and sometimes the Regional Commercial Superintendent or a District officer.

The most important work of the Area Committees is stated by Mr. Cameron to have been consideration of branch line closing; decisions are based on data supplied by the Railway Executive. The existence of the Transport Tribunal complicates the question of consultative committees' terms of reference. The Transport Act of 1947 lays down that every consultative committee shall make recommendations on any matter(including charges) affecting the services provided by the Commission. In December, 1949, the Federation of British Industries protested to the Central Transport Users' Consultative Committee against the 16⅔ per cent freight rate increase to which the then Minister of Transport had agreed after statutory consultation with members of the Transport Tribunal. The difficulty, Mr. Cameron comments, was solved " in a fashion typically British " by the Minister acknowledging the committee's right to express views, and by the committee's (less the B.T.C. representatives, who dissented) expressing views whilst realising that the Minister in considering those views would have also to consider the advice of the members of the Tribunal. More recently, there was the reference last April by the Minister of Transport to the Central Committee of the problem of London bus fare stages. The facts are public knowledge; but it is significant that the committee, a good section of public opinion, was unanimous in its recommendations in favour of the operation of part of the passenger charges scheme, thereby endorsing the decision of the Transport Tribunal; the Government nevertheless saw fit to suspend that part of the scheme. This is conclusive evidence of the impartiality of the Central Committee, and examples could be given illustrating the objectivity of the Area Committees. Mr. Cameron easily disposes of criticisms of subservience to transport management and alleged other defects of the committees. He points out that the success of the operation of the committees largely lies in the absence of complaints for them to deal with and questions to discuss—bearing in mind the extensive commercial and public relations organisations of the various Executives. The committees moreover meet too seldom and are not equipped to try to consider questions of general transport policy and organisation.

Kings Cross Centenary

CONSTRUCTION of the Great Northern Railway marked the first real challenge to the dominance by Euston of all rail traffic to the North. Openings in 1850 had established a somewhat circuitous East Coast Route from a temporary London terminus in Maiden Lane (¾ mile from Kings Cross), but its effectiveness as one of the great main lines awaited the completion of the " Towns " line between Peterborough and Retford. This was opened on August 1, 1852, and the great London terminus at Kings Cross on October 14. The centenary of these events is being marked this week by the Eastern Region of British Railways in an exhibition at Kings Cross Station. The station was designed by Lewis Cubitt (1799-1883), a brother of Thomas Cubitt (founder of the well-known firm of builders), and cost £123,500 to build, in addition to £65,000 paid for the purchase and removal of the Small-Pox and Fever Hospitals that formerly occupied the site. It covered an area of 10 acres.

The design of the station is said to have been based on that of a riding school in Moscow, then recently completed for the Tzar. It consisted of a simple, but imposing, brick façade, behind which the passenger accommodation was roofed by twin glazed arches, each 800 ft. long, 105 ft. wide, and 75 ft. high. This arched roof, believed to be the largest of its kind in the world, was carried on main trusses consisting of laminated timbers which exercised considerable thrust on the outside walls. The trusses of the arrival (eastern) side of the station were replaced by iron girders in 1870, and those of the western portion in 1886-7. To avoid disturbance to traffic, a large timber travelling stage was used. After the eastern half was finished, this stage was dismantled and the pieces numbered; it was taken from store and re-erected for the second part of the work sixteen years later. As built, the station attracted much admiration and some shareholders protested against the extravagance. To their criticism, Edmund Denison, the famous G.N.R. Chairman, replied " It is the cheapest building for what it contains and will contain."

Little is known of the architect, and he has often been stated, quite wrongly, to have been a relation of Joseph Cubitt, the G.N.R. engineer. The latter was one of a family of civil engineers who undertook much railway work, but was not related to the family of builders that is now represented by Holland & Hannen and Cubitts Limited. The somewhat elusive Lewis Cubitt certainly designed Bricklayers Arms and the first Dover station, and is believed to have made the drawings for some of the famous London squares built by his brothers. As the central feature for Kings Cross he adopted a clock tower 112 ft. high, which houses the large four-sided clock made by Dent and shown at the Great Exhibition of 1851, and its three bells. The 9 ft. dials are 90 ft. from the ground. It is unique in being the only public striking clock at a railway terminus in Great Britain. The striking was stopped at the outbreak of the first world war, but restored in 1924. Three years later it was discontinued, without an official reason being given. The station was built by John Jay of the Euston Road, assisted by his brother, William Jay. For a considerable period, 1,000 men were employed on the works. Jay afterwards built a substantial section of the Metropolitan Railway.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Harrow & Wealdstone Accident, L.M.R.

October 9

SIR,—In an accident such as we had at Harrow & Wealdstone on October 8, I am sure it will be understood how difficult it is to communicate personally my appreciation to all those who so spontaneously rendered such valuable assistance both in person and in kind.

I would, therefore, like to express my grateful thanks to each and everyone who voluntarily helped in every way possible in this unfortunate accident.

I should also like to express my thanks and appreciation to the Press and the B.B.C. for their consideration and helpfulness.

Yours very truly,
J. W. WATKINS,
Chief Regional Officer

London Midland Region,
Euston Station, London, N.W.1

Railway Regions

October 8

SIR,—Your editorial comment headed "Railway Regions," in your issue of October 3, will, I think, meet with a mixed reception from many people who are concerned with the implications of the Government's proposals.

You infer that the necessity for practical changes is a widely held view, but do you seriously suggest that any responsible person really believes that the whole of the aspects of the British Transport Commission have been in operation for a sufficiently long time to allow an objective and impartial examination of possible faults and failures, including the alteration of Regional boundaries and organisational changes within each separate Region.

This does not mean that my trade union gives universal approbation to every phase of transport operation under the State, but we do say that such a major project as was created by the 1947 Act should not be hastily condemned by ill-considered proposals without the most mature thought being given to both the past and the probable results of the future.

You also suggest that the term "Region" should be abolished and substituted by the word "Railways" in order, as you emphasise, to stimulate the old loyalties associated with each former company. Surely you are not fully appreciative of the fact that transport has now to operate within the framework of conditions in 1952, and what happened in 1902 matters very little to the average railwayman who, in the main, wants decent wages, conditions and a pension scheme. While he is quite willing to acknowledge the memories he retains of the "old company," he very much realises the necessity for co-ordination and new ideas if State transport is to function successfully.

Constant reiteration of these "human loyalties" to the former railway companies could create, in the minds of a few, antagonism to any new innovation, and thus possibly retard what every sensible railwayman desires, namely, an efficient and integrated transport system giving a constantly improving service to the travelling and trading community.

Having spent the whole of my working life in the employment of the former Great Western Railway Company, I am definitely a "Western" man, but being a realist I appreciate to the full that modern industry cannot live on memories of the past, and if too much stress is placed on the loyalties of yesterday, it could mean handicapping the future progress of this large industry to which many thousands of men have dedicated their lives and also acted as good, responsible citizens in the process.

Yours faithfully,
H. W. FRANKLIN,
President

National Union of Railwaymen,
Unity House,
Euston Road, London, N.W.1

[Mr. Franklin appears to have misunderstood the purport of our note. Indeed, he supports the views that we expressed. We urged that the alteration of regional boundaries should be deferred and that after five years of experience in the present Regions sweeping innovations should be avoided. That seems to us to be very much what Mr. Franklin proposes. Our suggestion that the word "Railway" should replace the term "Region" did not infer harking back to the old companies. In our view the word "Railway" means something to railwaymen and if included in the regional titles would help to promote loyalty and establish and perpetuate traditions in particular areas. Here again, Mr. Franklin seems to agree with us, for he says that he is definitely a Western man.—ED., *R.G.*]

"Statistics Run Wild"

October 14

SIR,—The writer of the article which appeared in your issue of October 3 under the above heading has failed completely to perceive the real nature and objectives of the passenger traffic survey now in progress. There is nothing new in taking a passenger train census and I feel sure that you, Sir, have referred to the former railway practice in many past issues. Counts on similar lines to the present one were made yearly or half-yearly by the L.M.S. and L.N.E. companies for many years. The other railway companies used counts although their records were not taken in the same form. The information from all these counts has long been regarded as essential for the planning of train services. There is no analogy with the data published in *Transport Statistics*. The results derived from the census are largely for local use and will not be aggregated for publication.

Apart from the much-needed standardisation of method, the new derivative statistics of average loadings (for which provision is made on the forms and which will be calculated in the mileage offices) will be used to give the district and regional officers responsible for railway passenger business a clearer and more detailed picture than hitherto of the receipts and costs of the trains they run. This is vital in the increasingly competitive situation in which railways find themselves.

It is an essential part of good management to be aware of how much of one's output (train- and seat-miles) is being sold, and where and with what results.

On certain points of detail made in your article, may I state: Relief trains are *not* excluded; under the final instructions, mileage (to be inserted in the mileage office and not by the station staff as you inferred) is to be given to the nearest mile and *not* to two decimal places; no station has been called on to record any train on more than one form, one form being a smaller edition of its pair, in the interests of economy.

You assert that in the compilation of the necessary forms and in the preparation of the scheme, former experience and the practicability of the present survey were not considered. In point of fact, the survey was evolved in full consultation with the central and regional organisations, and it is designed to yield results which will be of the greatest value to the utilisation and development of passenger services.

Yours faithfully,
J. H. BREBNER,
Chief Public Relations & Publicity Officer

British Transport Commission, 55, Broadway, S.W.1

[We fear we remain impenitent, largely because (*a*) we believe the objectives of the census will be impossible to achieve because of the likelihood of a wide margin of error in the returns, (*b*) of the cost and manpower involved. —ED., *R.G.*]

THE SCRAP HEAP

Ducal Engine Driver

The Duke of Saragossa, who is 74, recently drove the "Golden Arrow" from Paris to Calais. Since the death of the late King Boris of Bulgaria he must be the most distinguished amateur railway enthusiast, at any rate by Almanach de Gotha standards. The Duke holds an engine-driver's ticket on the R.E.N.F.E., and still sometimes takes a turn between San Sebastian and the frontier station at Hendaye.

Under the monarchy he often drove the Royal train. He did so when King Alfonso paid his last visit to Paris in 1930. At the start of the return journey the King was taking a prolonged farewell of friends and French officials on the platform when a grimy figure leaned out of the engine cab. "Get a move on, Alfonso," he shouted, "or we shan't be off on time ."—*"Peterborough" in "The Daily Telegraph."*

Railway Forestry

After an extensive survey of forestry development possibilities in the territory alone its lines, the Illinois Central Railroad launched a full-scale forestry programme in 1946. Today the company maintains the largest forestry staff of any railway in the U.S.A., with full-time agents in Mississippi, Louisiana and Tennessee. In 1948 a mechanical tree-planter capable of planting 1,000 seedlings an hour was designed and built by the railway in its own shops. Mechanical planters of this design are now being commercially manufactured and more than 150 are in use. The forestry schools of Yale University, University of Illinois, University of Michigan, and Iowa State College use the Illinois Central-designed machine in their forestry work. More than 3,000,000 seedlings have been set by this type of mechanical planter since its development. Mr. Paul R. Farlow, General Agricultural & Forestry Agent of the Illinois Central, describes the company's efforts to encourage reforestation as a contribution towards preservation of an essential natural resource. Wood is a product which can profitably be marketed by farmers and growers in the company's territory, to the long-range economic gain of grower, railway, and all Mid-America.

M.S.L. Survival

A road bridge over the old G.C.R. line at Retford, writes a correspondent, Mr. H. A. Cobbin, still carries notices dating from Manchester Sheffield & Lincolnshire days. We reproduce his

Photo.] *[H. A. Cobbin*

One of two old notice boards still in use on a bridge at Retford, Eastern Region

photograph of one of the boards herewith. "Pre-Nationalisation, Pre-Grouping, Pre-Great Central!" is his comment on this hardy survival, which, with its companion, is on the bridge carrying West Carr Road over the railway at the north end of the station.

L.M.R. Travel Pictures

The London Midland Region has brought out six new coloured travel pictures which are being displayed in its non-corridor coaches. They are reproductions of oil paintings by Mr. C. Hamilton Ellis. One, shown in the accompanying illustration, is of a North Staffordshire Railway up Manchester express near Stoke-on-Trent in 1885. The other pictures portray the following subjects: Leicester & Swannington Railway train, 1835; Derby Station, North Midland Railway, 1840; West Coast express hauled by a "Large Bloomer," 1865; Furness Railway motor train, 1910; and Burton & Ashby Light Railway car, 1915.

Through the Window

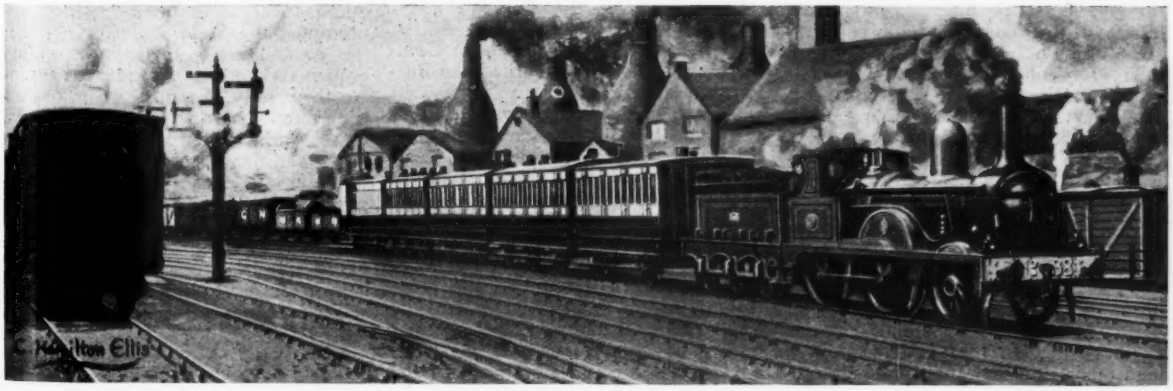
A correspondent to the *Belfast News-Letter* has recalled the one-time popular pictorial entertainment called the "diorama." He writes: "The last entertainment of this type in Belfast that I remember was given in a temporary circular building on the Dublin Road, the then unbuilt area north of Marcus Ward Street. It was a panorama of Palestine. Later there was a kind of forerunner of the cinema. A series of large pictures, unwound on a continuous roll, was shown in a representation of a railway carriage, and the illusion was heightened by a swaying motion and a noise like that of a train. I believe this entertainment was called 'Hale's Tours,' and that the railway carriage was on a site at the corner of Winetavern Street and North Street."

A Train Car Called "Darling"

The Continental departure platforms at Victoria are relatively quiet now after the summer rush, when there always was a moment of opulent calm amid the rucksacks and excitement of the workaday morning services. This was the departure of the all-Pullman "Golden Arrow." Now this train leaves in the early afternoon and unloads its well-fed passengers in Paris at 9.30 p.m.

Otherwise the "Golden Arrow" is unchanged. . . . Its decoration, lit by pink lamps that look as though they had been taken from the balconies of Covent Garden, is plushily discreet. Its most imaginative fling is a Pullman car named (in Italian) *Darling.—From "The Manchester Guardian."*

[The car in question is *Carina*, named after the constellation; it is one of a set of cars similarly named, built for the "Golden Arrow" and placed in service last year.—ED., *R.G.*]



A reproduction of a painting by Mr. C. Hamilton Ellis showing a North Staffordshire Railway up Manchester express near Stoke in 1885

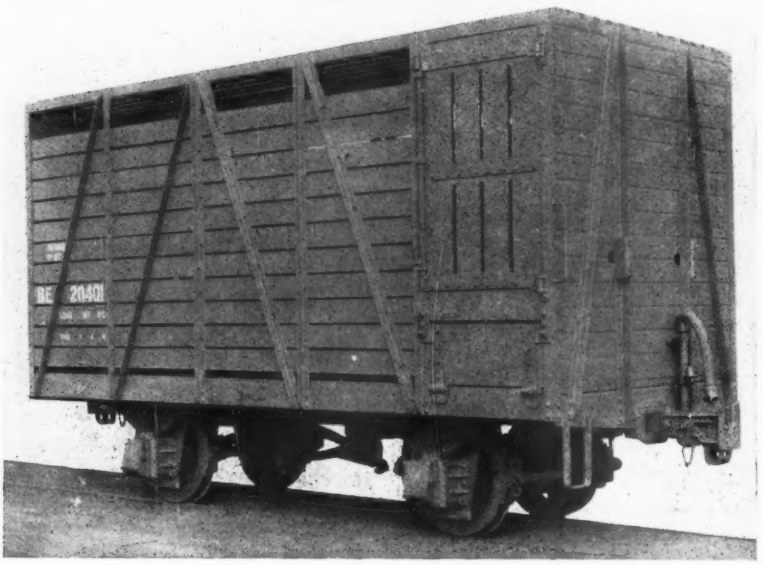
OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

WESTERN AUSTRALIA

New Cattle Wagons

Three hundred "BE" class four-wheel cattle wagons now being produced for the Government Railways by Tomlinson Steel Limited, Perth (Western Australia) will be a welcome addition to the number of wagons for transport of livestock. The wagons are 17 ft. 10¼ in. long inside body and 7 ft. 6¼ in. wide. The wheelbase is 10 ft. The load is eight head of cattle or horses.



One of 300 new cattle wagons being supplied to the Western Australian Government Railways

UNITED STATES

Pennsylvania Train Supervisors

The Pennsylvania Railroad has assigned special supervisors of service to give personal attention to every phase of the operation and performance of trains. One man has responsibility for enhancing the attractiveness of service, as the new supervisors co-ordinate the duties of the many members of the staff who prepare, operate and serve on the trains. The supervisors' duties include becoming acquainted with passengers on trains, obtaining suggestions for improving service, and determining whether additional refinements may be made.

Each supervisor is responsible for the trains on a single run, such as the two "Broadway Limited" trains between New York and Chicago. He observes and reports on such matters as the preparation of stock in the yards, adequacy of train announcements, Red Cap (porter) and train gate services. The supervisors work with the train, Pullman, and dining-car crews, observing the handling of the train by the enginemen, temperature control in the coaches, adequacy of accommodation, and the like. On days when they do not ride, the supervisors see off and meet their trains, check coaches and discuss performance with the crews.

Besides the "Broadway Limited," trains which now have supervisor service are the "Cincinnati Limited" (New York-Cincinnati), "Red Arrow" (Detroit - New York - Washington), "Liberty Limited" (Chicago-Washington), "General-Trail Blazer" (New York-Chicago), "Spirit of St. Louis" (New York-Washington-St. Louis), and the "Pittsburgher" (New York-Pittsburgh).

Enforced Season Ticket Cut

In October last the Interstate Commerce Commission authorised the Boston & Maine Railroad to increase its inter-state season ticket rates by 66⅔ per cent, but the Massachusetts Department of Public Utilities would permit an increase of 25 per cent only in intra-state rates (that is, season ticket rates within the confines of the one state) from the same date. Most of the inter-state season tickets previously had been issued between points in New Hampshire and Massachusetts, and the result of the difference between the new rates was that many season ticket holders in New Hampshire formed motorcar pools, to make their way by road to and from towns just within the Massachusetts border, so buying season tickets inside Massachusetts only. The result has been that the B. & M. passenger loss has increased, by the loss of season ticket revenue outside Massachusetts, and in view of this loss, the Interstate Commerce Commission has now ordered the Boston & Maine to reduce its inter-state season ticket rates.

Chicago Station Skyscraper

On August 12 the first ground was broken in preparation for building a 41-storey skyscraper which is to rise 600 ft. above the Randolph Street Station of the Illinois Central Railroad in Chicago. The first ten storeys will be occupied by the Prudential Insurance Company, and the remaining 1,000,000 sq. ft. of floor space by other tenants. The building will be carried on 260 caissons, which will be sunk 150 ft. to rock foundations. The entire work of building is to be carried on without interruption to the electric train services which use the station, and it is expected that completion of the building will bring a considerable increase of season ticket traffic into and out of Randolph Street.

ARGENTINA

New Cross-country Service

A new rapid, weekly cross-country service has been introduced by the General San Martín, D.F. Sarmiento, and General Roca Railways between San Juan and Bahía Blanca. It covers the 1,214 km. in 20 hr. 10 min. at an overall speed of exactly 60 km.p.h. The previous timing was 40 hr. 15 min. The part of the journey between San Juan and Justo Daract is covered by "El Cuyano" (San Juan-Buenos Aires); between Justo Daract and Bahía Blanca a one-class Ganz diesel set runs over the metals of all three railways, with stops at the principal stations.

ITALY

Methane Gas Traction

The abundance of methane gas produced in areas in the Po Valley, has prompted the State Railways to study the possibilities of methane as motive power on certain secondary lines in Northern Italy, to replace steam or electric traction. Some State Railways power stations are operated by methane gas—as distinct from those operated by the natural steam of the Larderello region in Tuscany, the subject of an article in our January 20, 1950, issue. Methane has been adopted as fuel by many industrial concerns in Milan and elsewhere, and it is used to drive road vehicles, mainly lorries and taxis.

Congestion at Milan Central Station

Although opened only twenty-one years ago (on July 1, 1931), Milan Central Station has proved inadequate to cope with the great expansion of passen-

ger traffic. At present, some 450 trains arrive and leave in 24 hours. As there seems to be no further possibility of increasing this number, it has been decided to provide temporary relief by gradually diverting some 150 trains daily to subsidiary stations.

One of the subsidiary stations to be used is Porta Nuova, an old station close to the Central and at right angles to it. This mainly serves the electric outer-suburban trains to the west (Varese), but now is also served by the *rapidi* to and from Turin. A disadvantage of the Central Station felt by the public from the beginning is the steep flights of stairs leading from the booking hall to the concourse and platfiorms, and the absence of large lifts without charge. The installation of escalators has been proposed from time to time.

SWITZERLAND

Austro-Swiss Frontier Stations

Agreement has been reached between Austria and Switzerland on the reconstruction and common use by the Austrian and Swiss Federal Railways of the frontier stations of Buchs, on the Zurich - Arlberg - Innsbruck - Vienna through route, and of St. Margarethen, on the St. Gall - Bregenz line (part of the Geneva - Zurich - Munich through route). Both stations are in Swiss territory. The agreement expires in 1961; it has put an end to proposals to transfer the Austrian frontier formalities from Buchs to Feldkirch, 12 miles north-east, in Austrian territory, the junction of the Vienna - Buchs line with that to Bregenz. Between Buchs and Feldkirch the Austrian Federal line runs through the Principality of Liechtenstein, whose capital Vaduz is served by Schaan-Vaduz station.

NETHERLANDS

Faster International Goods Services

International goods services to and from Holland are much faster since introduction of the winter timetable. Thus, in traffic with Italy and Switzerland, loaded wagons leaving Chiasso, the chief Italo-Swiss frontier station on the Gotthard line, at 8 a.m., and Basle at 3 p.m. that day, reach principal Dutch destinations, such as Amsterdam, Rotterdam, Maassluis, or the Hook of Holland (the last two for shipment to Britain) about 7 a.m. next day. These accelerations are of particular significance in the increasing citrus fruit and vegetable traffic from Italy.

New Station at Eindhoven

The Netherlands Railways' plans for the new station at Eindhoven include a station building of several storeys flanked by a post office on one side and a bus station on the other The booking hall, nearly 150 ft. wide, will be at the same level as the subways leading to the three platforms, which will be reached by wide flights of stairs. The platforms will be nearly 1,000 ft. long and will be totally enclosed by glass walls over part of their length. The basement of the station building will have ample accommodation for bicycles.

WESTERN GERMANY

Location of Railway Headquarters

A final decision is announced in favour of Frankfurt/Main as the situation of the Federal Railways headquarters, now at Offenbach, near Frankfurt. The Federal Government, as stated in our issue of September 12, was in favour of the Cologne/Bonn area, where it considered all State administrative headquarters should be centralised.

Shortage of Steel Sheet for Wagons

A shortage of steel sheet is said to be crippling the output of rolling stock, and delays caused by this shortage have adversely affected the wagon building programme of the Federal Railways. The West German wagon-building industry is again pressing for a long-term wagon-building programme for the Federal Railways, which would enable the firms concerned to plan for provision of the materials required. The policy of short-term programmes followed by the Federal Railways generally has been criticised.

Publications Received

Communications. By E. E. Fidler. London, W.1.: The Office Management Association Limited, 8, Hill Street. 46 pp. Illustrated. Price 7s. 6d.—The long and varied experience in this field of the author, who is Communications Manager for Shell-Mex & B.P. Limited, has enabled him to produce a concise guide to an efficient communications system throughout a firm's organisation. Besides telephones, Mr. Fidler discusses teleprinters, recording machines, automatic mail conveyors, Telex, and so on. An illustrated supplement describes the apparatus referred to in the text.

Eisenbahn Technische Rundschau (Railway Engineering Review). Darmstadt, Germany: Carl Röhrig Verlag, Stephanstrasse 8. Published monthly.—This well-produced journal, covering every aspect of railway engineering, is issued under the editorship of Professor A. Baumann, a well-known authority on transport subjects, with the assistance of a committee of experts. This particular issue, dated August, 1952, was mainly devoted to the development of diesel traction in Germany since the war. That country had been to the fore in this field prior to 1939 and attained wide recognition for its work in connection with fast rail-car services. Dr. G. A. Gaebler contributed an interesting article on the evolution of the diesel locomotives used by the Bundesbahn since the termination of hostilities, prefacing it with a notice of the course of events in America and other places. He gave a full account of the constructional features of the new bogie locomotive fitted with hydraulic transmission, with details of designs prepared for other types of engine, both ordinary and shunting. Herr F. Mayr discussed the problem of fuel supply in connection with the possible large-scale extension of diesel traction in areas hitherto relying on steam. Even were diesel traction to be more extensively used in Germany, however, the Bundesbahn fuel consumption percentage would remain small, but it would become possible to export more locomotive coal. The concluding article, by Dr. H. Jessen, dealt informatively with various ways in which the Bundesbahn is making use of substitute materials. The September issue of this paper was a special signalling number.

Plastics in Industry.—Applications for plastics extend into every branch of industry, and a survey of the recent developments and the use of Bakelite, Warerite, and Vybak plastics is contained in a booklet published by Bakelite Limited. Bakelite laminated, in the form of sheet, rod and tube, is a primary insulator for many types of electrical equipment from electronic apparatus to heavy-duty generators; while Bakelite resins improve paints and varnishes, and are a bonding medium for grinding wheels. The hard-wearing and decorative qualities of Warerite make the materials specially suitable for interior panelling in rolling stock, restaurant car tables and so on. This material is available as panels $\frac{1}{8}$ in. thick, or as veneers applied to plywood. Vybak compounds are available in a wide range of colours, which materially assists where colour codings is required, such as in industrial electrical wiring or telephone installations. Included in the booklet are illustrations of recent applications, switchboards, decorative panelling, electrical instruments and other articles in moulded materials.

Handling of Materials.—Various examples of power-driven plant for handling materials, including mobile cranes and excavators, water pumps, concrete mixers, and so on, are illustrated in a pamphlet issued by Ransomes & Rapier Limited. Sizes and capacities of the machines are given.

Carbon Steel Castings.—Numerous full-page illustrations of foundry processes are reproduced in a booklet published by the Parker Foundry (1929) Limited to show the degree of specialisation and craftsmanship that goes into the production of the company's castings for industry. Examples of completed castings illustrated in the booklet include the axleboxes, end frames, and buffers for an industrial electric locomotive; and the faceplate for a Craven super high-speed lathe.

British Railways Locomotive Tests—2*

Application of test results to operating conditions

By E. C. Poultney, O.B.E., M.I.Loco.E.

THE extensive tests carried out have enabled a series of graphs to be prepared, from which valuable information can be had appertaining to locomotive performance; the particular graphs to be consulted when arranging train timings and loadings are referred to later. The overall picture depicting performance is given by graphs 1 and 2, Blidworth coal. They show the power range of the "Hall" class engine when in good condition. It will perform satisfactorily at any speed, cut-off, drawbar pull or horsepower within the compass of these graphs, the only variable being the boiler limit, which may vary with the class of coal fired.

Graph 1 shows the pull on the level at cut-offs from 10 to 50 per cent on a speed m.p.h. basis, also the overall thermal efficiencies at different combinations of cut-offs and speeds, or at constant speeds and varying cut-offs, and graph 2 provides a picture of the range of performance, also on a speed basis. It shows the drawbar horsepowers available at cut-offs from 10 to 50 per cent and the hourly coal consumptions, the tender water evaporated and the total steam produced per hr., the latter being the tender water and that returned to the boiler by the exhaust steam injector combined.

The graphs 3 and 4 analyse the coal and water rates per d.b.h.p. hr. and show the coal and water rates per hr., which may thus be related to the several rates of working, while the following graphs, 5, 6, 7, 8, and 9, provide information concerning passenger and freight train operation on a level road and on a rising grade of 1 in 200. When using Blidworth coal, these give, in conjunction with the graphs previously referred to, data which allow of the making of investigations concerning the economical working of trains. This may be illustrated by taking an example.

Referring to graph 5, as a case in point, freight train operation at 40 m.p.h. on the level is considered. In this graph the coal curve for 40 m.p.h. has been transferred from graph 8, and plotted against the scale of consumption shown on the basis of train loads in tons. With the coal curve in position, the best range of working and the corresponding load is seen. The train loads are as shown by graph 8. The most economical load is 640 tons, but economical working is obtained for all loads between about 480 and 900 tons so that, should the operating department wish to handle a higher load than 640 tons, this may be done and still with good economy within the wide limits shown.

It may happen that the actual train load selected may be required to be worked over a ruling grade of 1 in 200. Reference to graph 9 will give information as to coal rates for various loads at different train speeds on a rising grade of 1 in 200. The mean speed desired will depend in part on the journey time overall and the proportion of the entire distance, that is, on 1 in 200 up grades. In any case the coal curves for any speeds considered can be superimposed on that already plotted and the

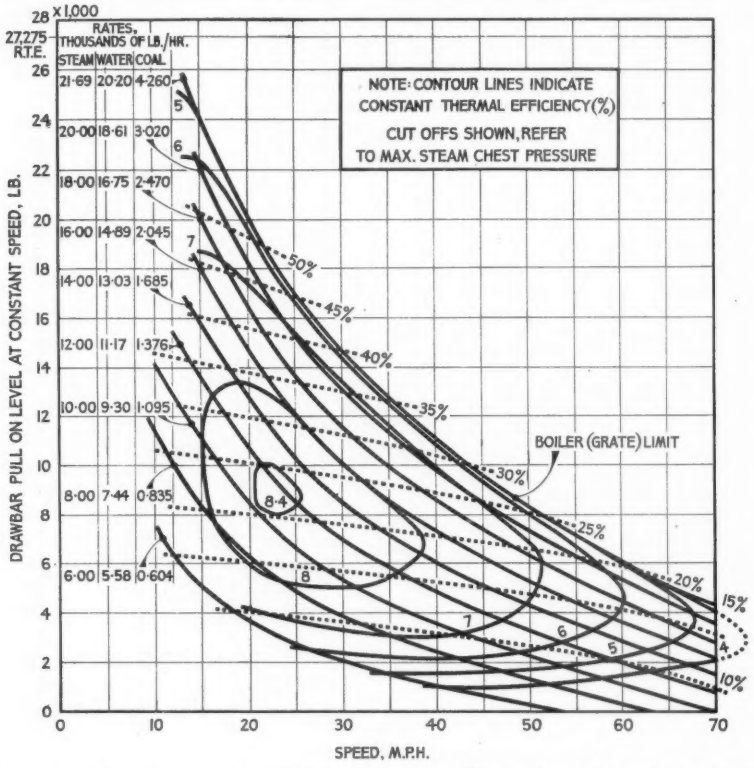


Fig. 1—Drawbar tractive effort and speed, Blidworth coal, with exhaust steam injector

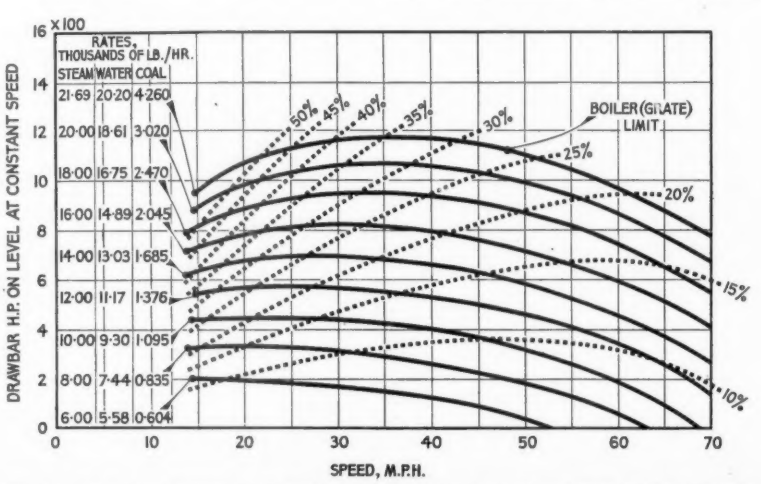


Fig. 2—Drawbar horsepower and speed, Blidworth coal, exhaust steam injector

* Part 1 appeared in our issue of October 10

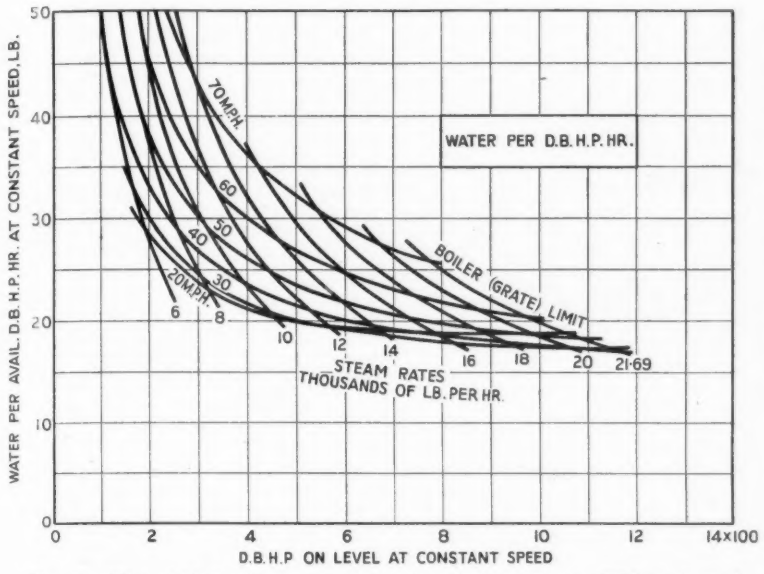


Fig. 3—Water/d.b.h.p.hr., power, speed and steam rate, Blidworth coal, exhaust steam injector

cost in coal consumption per d.b.h.p. seen. The mean speed on the grade can then be decided, the load being amended if thought desirable.

Naturally, certain commonsense points must be taken into account, such as track curvature, but this in no way detracts from the value of the test data. It will be noted that the coal rate-speed curves show also the cut-offs required for their production. Turning back, therefore, to graph 2, for any speed and at the cut-offs shown the actual d.b.h.p. developed on a level road is found. Further, the hourly coal and water consumptions are given for the different rates of working. If, therefore, there is any question of tender capacity being a factor of importance, the hourly rates of coal and water consumption may be estimated before the train loadings and running schedules are finally decided.

Similar computations can be made with respect to passenger train operation and also for both passenger and freight train working when coal of a different quality is used. The test report bulletins, as already mentioned, give information based on graphs similar to those illustrated for coal of another quality. These, however, cannot be included in this review.

A study of the graphs reproduced will bring to light many interesting features in locomotive and train operation. For instance, freight trains can definitely be more economically worked than passenger trains. Graph 8 shows that freight trains of 600 to 1,000 tons can be hauled on the level at 30 m.p.h. with a coal rate of 2·5 lb. per d.b.h.p. hr., whereas passenger trains of 300 to 450 tons require, according to graph 6, coal rates of from 3·4 to 3 lb. per d.b.h.p.-hr. at 50 m.p.h.

The actual quantitative values quoted apply, of course, to the "Hall" class locomotives. A further point brought out by these performance graphs is the relative flatness of the curves relating coal and water consumptions both with power output and train loadings when the characteristic showing this relation is plotted for some definite speed m.p.h.

Coal Consumption per D.B.H.P.

As a case in point, graph 4 shows that at 50 m.p.h. the coal rate is 2·5 lb. or less for all powers between 500 and 1,000 d.b.h.p. This with coal having a calorific value "as fired" of 12,500 B.Th.U. per lb. corresponds to an energy consumption of 31,200 B.Th.U. per d.b.h.p. hr., equal to an overall locomotive efficiency of 8·1 per cent.

Referring further to the lines showing coal consumptions per horse-power as measured at the drawbar, it will be seen that they take the form of rather flat curves. Consumptions are generally higher at low powers and over a considerable middle range of powers show almost constant comparatively low coal rates per horse-power hr. which finally rise again at the highest powers.

This is what may be called the "flat characteristic" of the coal consumption curves and is a most important feature in the economy of the steam locomotive for the reason that it means that, although the overall thermal efficiency of the locomotives may not be considered great when comparison is made with other forms of motive power, any efficiency it has, can in fact, be maintained over a wide range of working. Moreover, this feature is of additional value in that it tends to simplify the problem of selecting economical operating conditions from the standpoint of load-speed combinations, because coal consumptions per d.b.h.p.hr. vary so slightly at a given speed over a considerable range of powers.

The graph Fig. 4 shows, in addition to the coal consumption curves, a further series denoting constant rates of steaming, and it will be seen that the lowest rates of coal consumption at each of the speeds indicated coincide with a particular constant rate of steam production. Certain of the rates of steaming are more economical than others and, as a case in point for the "Hall" engine and when using Blidworth coal, the most economical rates of steam production apear to be from 14 to 16,000 lb. per hr.

Clearly, the points at which given amounts of steam production would coincide with the curves showing coal consumptions for given speeds would differ according to the evaporative value of the coal used for the reason that the

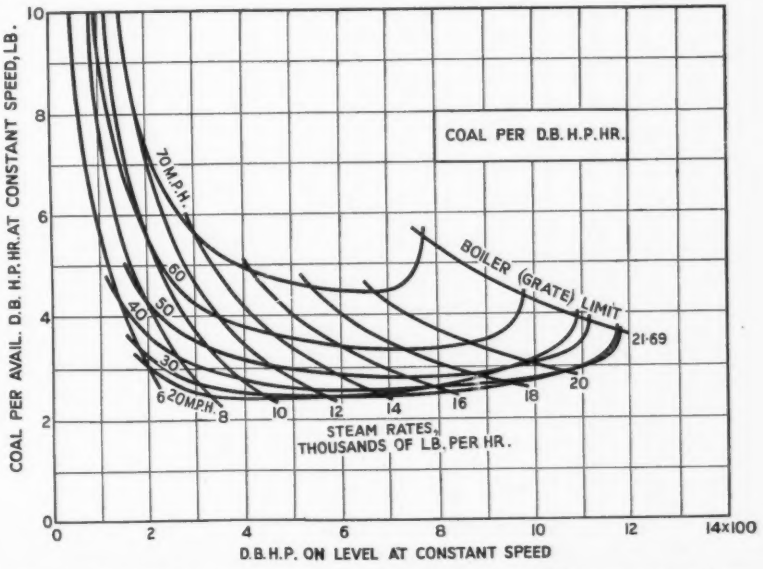


Fig. 4—Coal/d.b.h.p.hr., power, speed and steam rate, Blidworth coal, exhaust steam injector

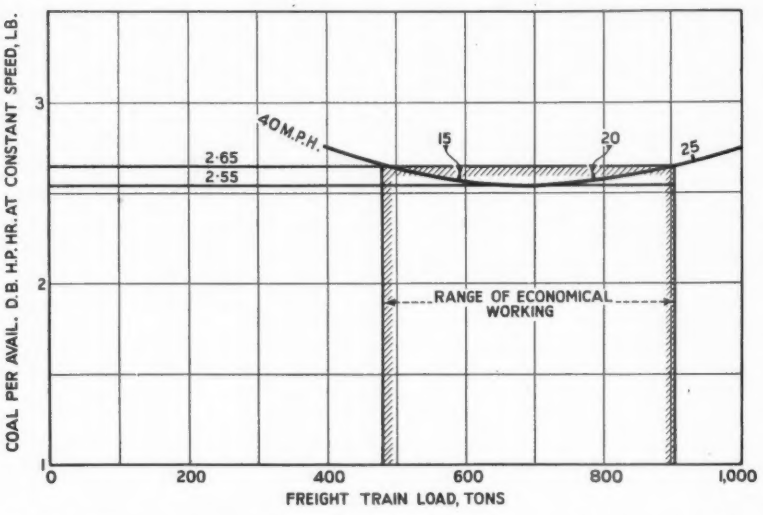


Fig. 5—Range of economical working at 40 m.p.h. in freight service-level, Blidworth coal, exhaust steam injector

governing variable factor would be the water/coal ratio, because steam consumptions would not change for any given cylinder power output at an assumed constant speed.

Boiler Performance

The test report bulletin gives information relating to the boiler performance and in this connection it is shown that the efficiency of the boiler and superheater only ranges between an upper limit of 85·5 per cent when 1,000 lb. of Blidworth coal is fired per hr. and at the "grate limit," reached at a firing rate of 4,260 lb. of coal per hr. the efficiency is 49 per cent. These rates of firing correspond to firing 37 and 157·2 lb. of coal per sq. ft. of grate area per hr.

At what are probably middle or average rates of firing of from 60 to 80 lb. of coal per sq. foot of grate area per hr. the efficiencies are about 79 and 73·5 per cent. These are for the boiler only, i.e., the feed was delivered by a live steam injector. The efficiency is increased when the heat units supplied by the exhaust steam injectors are taken into account, the respective overall efficiencies of the boiler and superheater including the heat supplied by the exhaust steam injector being raised to 93 and 52·1 per cent at the low and high rates of firing. The evaporative efficiency of this boiler alone is high at the low rate of firing, coal, lb. per sq. ft. of grate area per hr. Such being the case, it will be of interest to consider if, in fact, a materially greater efficiency is attainable. The value given for the efficiency of the boiler only at a given rate of firing is dependent on three factors:—

(*a*) The efficiency of combustion, which is the efficiency with which the coal fired is burned in the firebox. Put in another form, the amount of heat actually produced in the firebox, expressed as a percentage of the heat in the coal fired. This efficiency can be designated Ec.

(*b*) The efficiency with which the heat produced is taken up by the boiler, which is called the absorption efficiency. It is the heat transferred across the heating surfaces, expressed as a percentage of that actually produced. The efficiency of absorption may be designated Ea.

(*c*) The efficiency of the boiler is its evaporative efficiency, which is the heat utilised in evaporation and superheating, the steam expressed as a percentage of the heat in the coal fired. This can be represented by Eb.

The total heat absorbed by the boiler, which is transferred across the heating surfaces, is that utilised by producing the superheated steam, together with the heat lost through radiation from the hot boiler. Fry considered this to be equal to 5 per cent of the measured boiler exaporative efficiency. The total heat taken up by the boiler, expressed as a percentage of the heat in the coal fired, is, therefore, Eb × 1·05.

The heat produced in the firebox is equal to the difference between the heat in fuel "fired" and that lost through coal escaping "unburned" and any further loss due to the formation of CO. The sum of these losses deducted from 100 will, therefore, be the heat produced, expressed as a percentage of the heat in the fuel "fired," thus giving the efficiency of combustion, Ec.

The absorption efficiency is the total heat taken up by the boiler, Eb × 1·05, expressed as a percentage of the heat acutually produced, and is equal to the total heat taken up by the boiler divided by the heat produced in the firebox as a percentage of the heat in the coal fired, multiplied by 100. This is called the Efficiency of Absorption per cent, Ea.

(*Continued on page* 436)

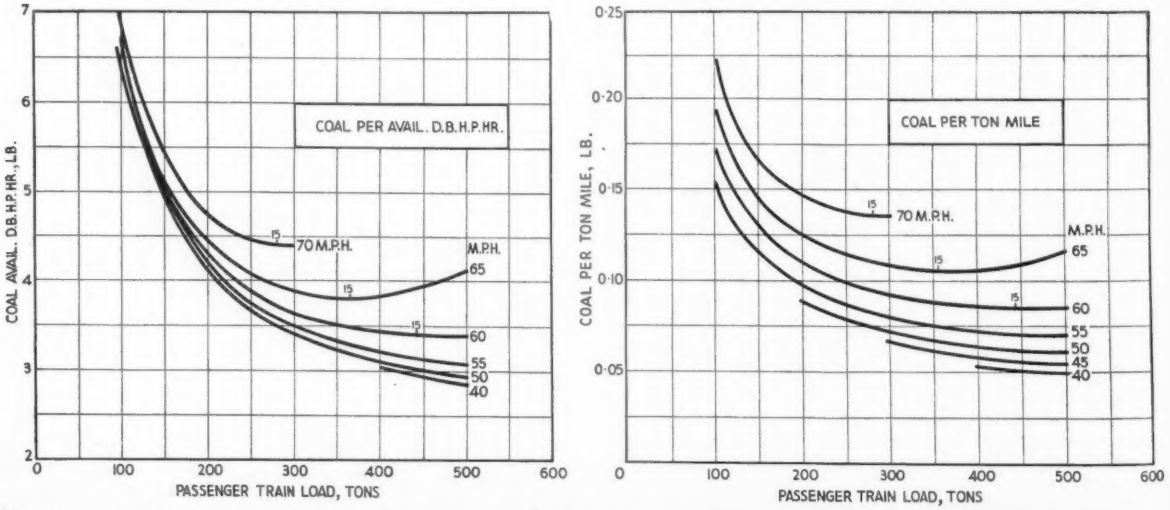


Fig. 6—Examples of cost in coal of different train loads and speeds, passenger service-level, small figures on the curves indicate cut-off, Blidworth coal, exhaust steam injector

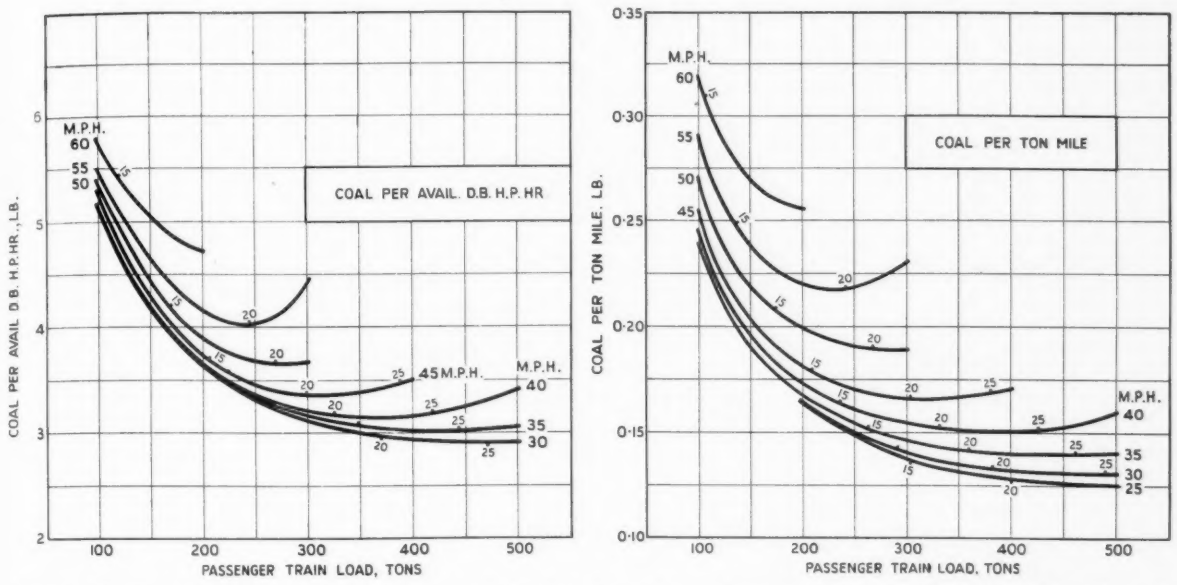


Fig. 7—Examples of cost in coal of different train loads and speeds, passenger service, 1 in 200 rising, Blidworth coal, exhaust steam injector

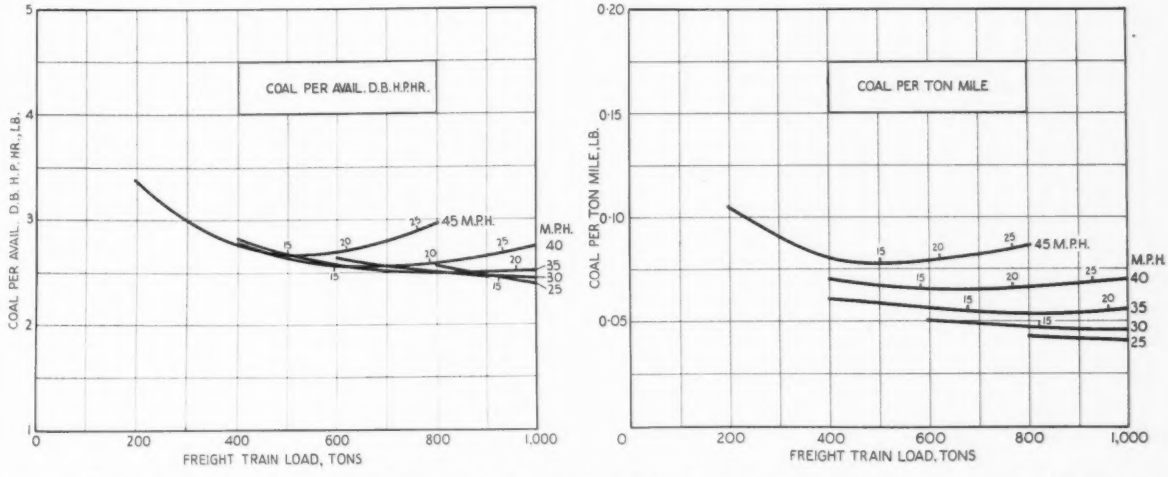


Fig. 8—Examples of cost in coal of different train loads and speeds, freight service-level, Blidworth coal, with exhaust steam injector

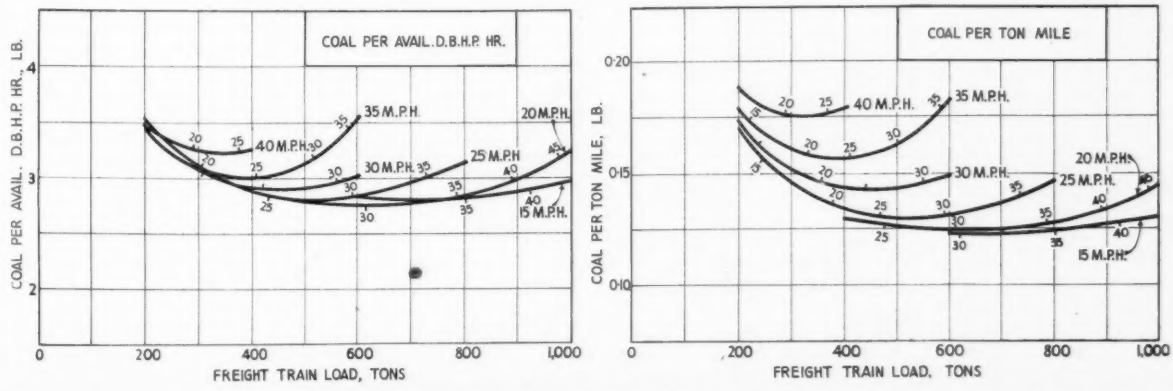


Fig. 9—Examples of cost in coal of different train loads and speeds, freight service, 1 in 200 rising, Blidworth coal, exhaust steam injector

Southern Region Colour-Light Signalling

Completion of second stage of scheme to provide continuous colour-light signalling between London and Brighton

THE second stage of the colour-light signalling scheme on the Central Section of the Southern Region was inaugurated on October 12, between Battersea Park and Selhurst, when eleven manually-operated signalboxes between Battersea Park and Streatham Common, containing 499 levers, were abolished.

The whole scheme, announced by the Southern Railway in 1946 and now estimated to cost approximately £2,000,000, includes the provision of eleven new all-electric signalboxes, of which three were brought into use in the first stage, inaugurated on October 7-8, 1950, between Bricklayers Arms Junction and Norwood Junction and described in our January 12, 1951, issue. When completed, the project, in conjunction with the existing installation between Coulsdon and Brighton *via* Quarry, will give continuous colour-light signalling from both Victoria and London Bridge to Brighton.

In place of the boxes abolished are three new all-electric boxes totalling 225 levers, and 39 automatic sections, the whole covering 14¾ route miles and 46 track miles. The new boxes are Clapham Junction "B" (103 levers), Balham (43 levers), and Streatham Junction (79 levers). Included in the boxes are relay and accumulator rooms, stores rooms and maintenance staff accommodation as required. Equipment associated with the main signalling supply system is also housed at the new boxes.

The existing manually-worked Selhurst box is being retained until the introduction of the third stage, and the existing manually-worked box at Thornton Heath is being retained permanently, although it will normally be used for shunting movements only, and switched out the rest of the time, the running signals then working automatically. In the whole of the second stage area there are 125 colour-light signals of the multiple-aspect, long-range type, and 20 junction indicators. The signal spacing provides for a 2½ min. headway for following stopping trains.

Lightweight signal bridges were designed and erected by the Civil Engineer of the Southern Region. Tubular steel straight posts, with gallery, were designed by contractors to the Signal & Telecommunications Engineer's requirements and erected by his staff. There are 43 floodlit disc-type shunting signals, solenoid operated, and 103 point machines, mostly operated from 120-volt accumulator batteries at the three new signalboxes, the batteries being float-charged by rectifiers; there are also stand-by rectifiers at these boxes for direct point operation if necessary. Telephones connected to separate circuits are provided at all automatic and most controlled signals, giving train crews direct communication with the signalbox concerned.

There are 239 condenser-fed track circuits, single and double rail, incorporating 290 impedance bonds. Track relays are so far as possible located in the signalbox relay rooms, local controller rooms, or the apparatus cases of automatic signal locations. The cable route is almost throughout surface concrete troughing, of which there is approximately 20 miles. Signalling cables are multicore V.I.R. lead sheathed, the number of conductors varying from 10 to 40. There are 1,000 core miles of signalling cable, 250 pair miles of telephone cable, dry-core lead sheathed and S.W. armoured, and 12 miles of oil impregnated paper insulated lead sheathed S.W. armoured twin feeder cables for 480 V. and 110 V. distribution.

Equipment in Signalboxes

At signalboxes the lever frames are miniature type, individual levers with all-electric interlocking. Each lever is fitted with two lock magnets, one for interlocking purposes and the other for track and indication locking. All signal levers are fitted with back or normal indication locks, but front or normal selection locks are not provided. Normal and reverse track locks

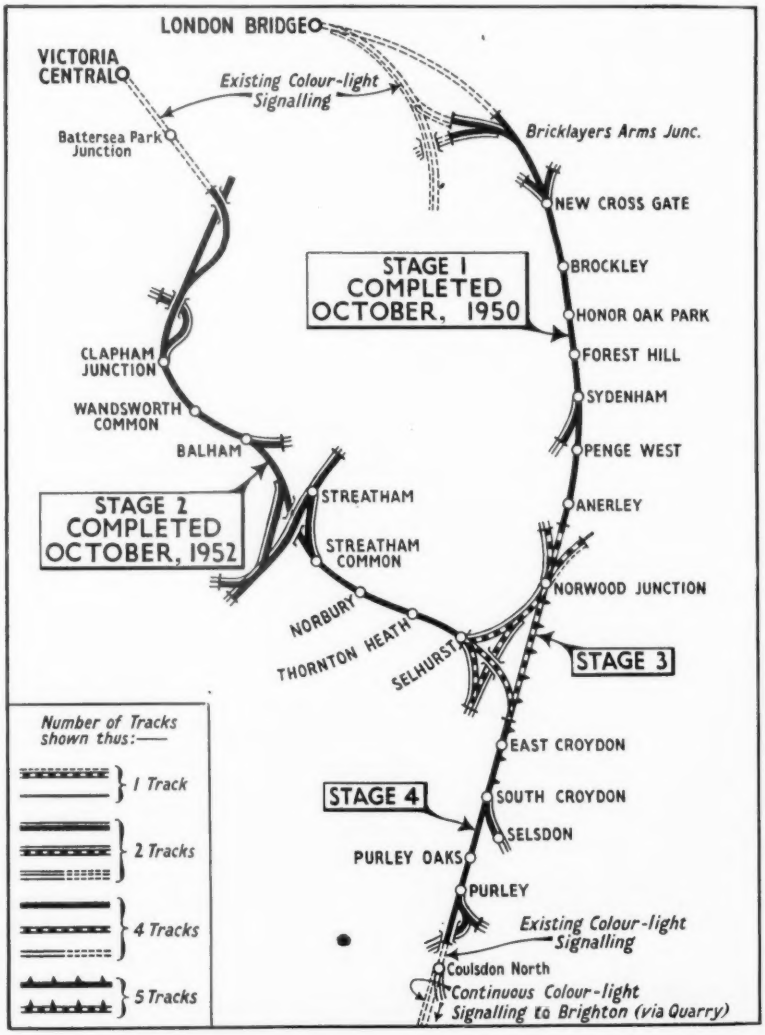


Diagram showing stages in colour-light signalling scheme on the Central Section of the Southern Region

New Clapham Junction "B" box, which replaces the mechanical box seen in the background

are fitted to each point lever. Behind each signal lever are repeated in miniature lights all aspects of the signal it controls, that is, red, one or two yellows or green. Running and shunt signals also have an "F" light indication behind the lever, which when illuminated tells the signalman that the signal can be cleared by reversing the lever. Behind each point lever is an illuminated "N" or "R" indicating the position of the points it controls. Behind the lever frame is a large illuminated diagram of the area controlled by the signalbox, showing all signals, points and track circuits, with their identification numbers and letters. When a train occupies any track circuit, its presence is indicated on the illuminated diagram, so that signalmen are continuously aware of the position and movement of trains.

Magazine train describers are provided between all signalboxes. These enable signalmen, merely by pressing an appropriate button, to advise adjacent signalboxes of the next train, its class and destination; there is an instrument at the "receiving" signalbox with descriptions corresponding to those on the instrument at the "sending" signalbox. The receiving instrument indicates the first, second and third trains, the indication automatically stepping up one as each first train is cancelled on passing the signalbox. There are eighteen sending and twenty-four receiving instruments, with associated equipment. Each signalbox is in telephone communication with signals, adjacent signalboxes, and traffic control; telephone positions are duplicated as necessary so that the booking lad can also deal with calls.

The relay rooms house main transformers, fuses, rectifiers, and all the control apparatus on which depends the safe operation of the system. The main signalling supply at each signalbox is 480 volts into the relay room from the Mechanical & Electrical Engineer's portion of the signalbox. Local distribution is at 110 volts, but all automatic signal and other major locations are fed at 480 volts. The controlling relays, of which there are 760 in the various rooms, are on steel racks conveniently placed for observation, testing and changing. The fuse and cable termination panels, also of steel, are up to 24 ft. long, and each fuse panel carries 500 to 700 fuses. One hundred and fifty miles of flameproof wire have been used in the signalboxes and relay rooms.

The three new signalboxes (Streatham Junction, Balham Junction and Clapham Junction "B") were designed and constructed by the Civil Engineer, Southern Region, to the requirements of the Signal & Telecommunications Department. All three structures were sited on made-up ground, to depths up to about 20 ft., which had been deposited to form the railway embankments. At Streatham Junction the fill was of a fairly uniform mixture of clay and stones, and a reinforced concrete raft was adopted. At Balham and Clapham Junction soil investigation revealed ashes and variable material for considerable depths. It was decided, therefore, to resort to piled foundations, and piles of the *in situ* reinforced concrete type were successfully used for this work. Main drainage systems were provided at all three.

As in the first stage, the boxes have been provided with central heating and steel windows, including sliding sashes on ball bearings. The signalboxes were begun soon after midsummer, 1949, and were completed structurally early this year.

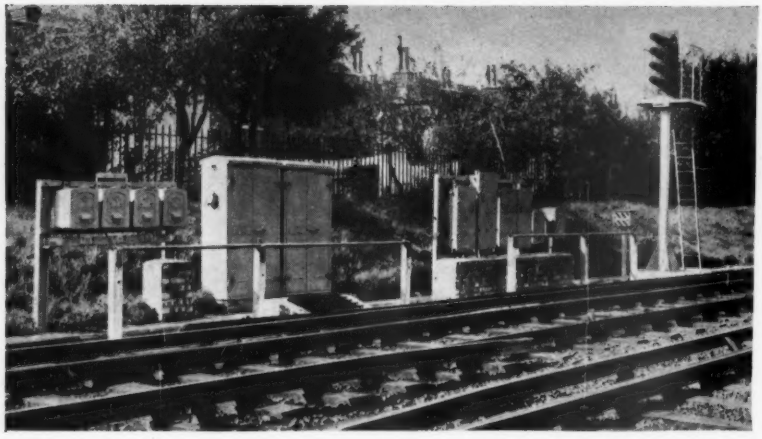
Signal Bridges

The signal bridges on the present stage of the colour-light signalling scheme are, in the main, welded steel spans up to about 70 ft. In designing these structures, which are light and of pleasing appearance, particular regard was paid to the desirability of keeping down maintenance costs, particularly of painting. Stanchions are of the single leg, welded box type and, where four roads have to be spanned, the girders are of the shallow solid-web type; for bridges spanning five roads an open Vierendeel type has been adopted.

The large cantilever structure at Pouparts Junction is of all-tubular welded construction; the cantilever part is of tapering triangular cross-section. It was flame-sprayed in aluminium with the object of reducing maintenance to the minimum. Erection of these bridges was carried out quickly and several were erected per night on previously prepared reinforced concrete bases.

The whole of the signalling installation was designed and carried out by the Signal & Telecommunications Engineer's Department. The number of men employed varied between 100 and 200 as the work progressed. The changeover on October 11-12 was carried out by about 500 men of the Signal & Telecommunications Engi-

New 43-lever box at Balham



Automatic signal and apparatus cases between Thornton Heath and Norbury

neer's staff, and another 100 men from the Operating and Civil Engineering Departments, and was completed in time for normal resumption of traffic on the Sunday morning.

The third stage, the Norwood - Selhurst - East Croydon triangle, is planned to be brought into use in 1954, and will link the first and second stages. The last stage, from East Croydon to Purley, forming the last link with the existing colour-light signalling at Coulsdon North, should be completed in 1955.

The following were contractors for the equipment:—

Siemens and General Electric Railway Signal Co. Ltd.	Signals and most track circuit apparatus
Westinghouse Brake & Signal Co. Ltd.	Lever frames and illuminated diagrams; all relays; points machines and shunt signals
Siemens Bros. & Co. Ltd. ...	Telephone equipment
Alton Battery Co. Ltd. ...	Accumulators for points machines
Tubewrights Limited ...	Tubular steel signal posts
W. R. Sykes Interlocking Signal Co. Ltd.	Test cases
Johnson & Phillips Limited; General Electric Co. Ltd. W. T. Glover & Co. Ltd.; Siemens Electric Lamps & Supplies Limited; British Insulated Callenders Cables Limited	Signalling cables
W. T. Henley's Telegraph Works Co. Ltd.	Telephone cables
Edison Swan Cables Limited	Flameproof wire

British Railways Locomotive Tests—2

(*Concluded from page* 432)

The relation between the three efficiencies may be expressed as follow:—

$$Eb = \frac{Ec \times Ea}{1{\cdot}05 \times 100} \text{ or}$$

$$Eb = \frac{Ec \times Ea}{105}$$

It will, of course, be understood that the boiler efficiency per cent. Eb must be the evaporative efficiency of the boiler only and must not include any evaporation due to the use of a feed water heater of any description which utilises exhaust steam or exhaust gases as the heating medium. In practice and for reasons that cannot now be discussed, the efficiency of absorption differs only slightly as between one boiler and another and changes only to a small extent throughout the range of working for any particular boiler.

The actual efficiency can only be arrived at when the heat produced has been determined. However, in the case of the "Hall" boiler, the front end temperatures are very moderate at the lowest firing rates when the efficiency is at its highest and the absorption efficiency has, consequently, been assumed as being 90 per cent, falling possibly to about 85 per cent at maximum output. On this assumption it follows that for a boiler efficiency of 85·5 per cent the combustion efficiency must be:—

$$Ec = \frac{105 \times 85{\cdot}5}{90} = 100$$

This is 100 per cent combustion efficiency, just possible at the low rate of firing of only 37 lb. of coal per sq. ft. of grate area per hr. Further, if the absorption efficiency was less than the suggested value, the efficiency of combustion would, of course, have been greater, which would be impossible. At the maximum rate of firing, the experimental results show, as already mentioned, a boiler efficiency of 49 per cent. Taking, therefore, the assumed absorption efficiency as being 85 per cent, the combustion efficiency would be:—

$$Ec = \frac{10^{5} \times 49}{Ea} = 60{\cdot}1 \text{ per cent}$$

The losses due to imperfect combustion and the escape of unburned coal are, therefore:—

$$100 - 60{\cdot}1 = 39{\cdot}9 \text{ per cent}$$

This may perhaps be thought to be a high loss of unburned fuel, but it must be realised that the rate of firing lb. coal per sq. ft. of grate area per hr. is much in excess of that which is usual. In fact, in practice, it would be rarely, if ever, attained.

(*To be continued*)

WIRELESS SETS FOR TRAIN PASSENGERS.—The Italian State Railways announce that the Rome-Milan high-speed multiple-unit electric trains (*elettrotreni*) will have individual radios for passengers in December. The sets will be concealed in the head cushions, and transmissions will be inaudible unless the head is rested against the loudspeaker. Passengers will have a choice of three programmes.

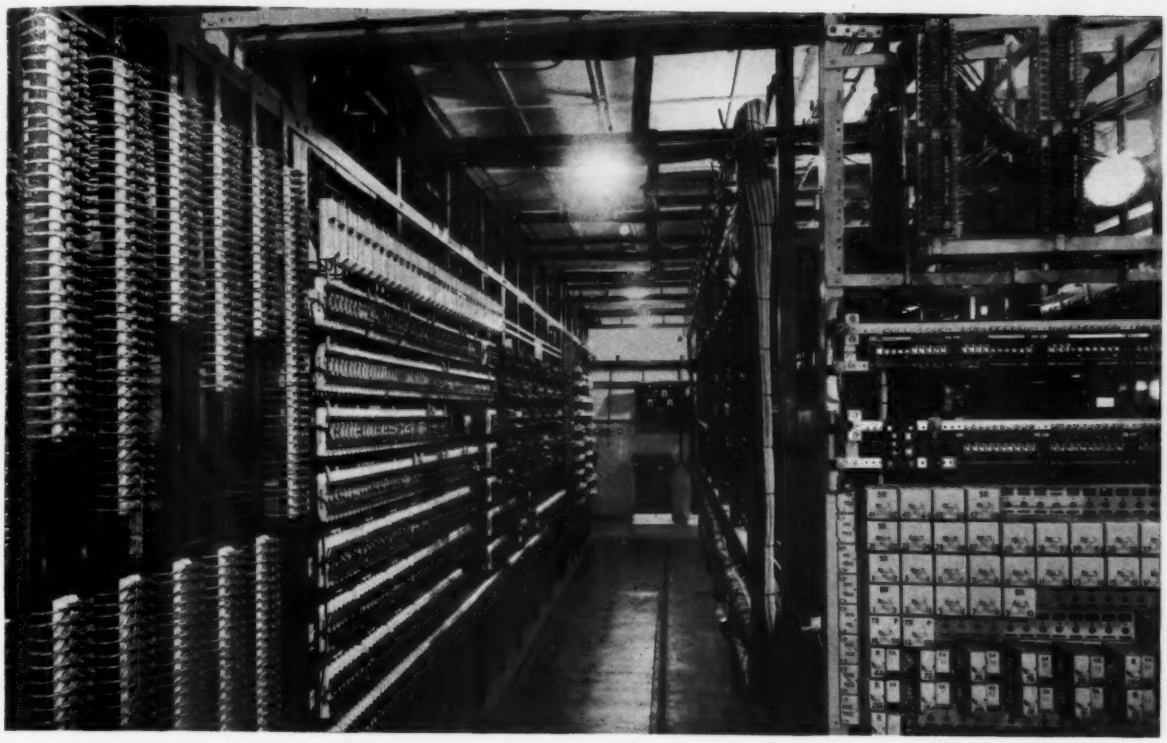
BRITISH STANDARDS FOR PIPE FITTINGS.—A revision has been made of the British Standards for malleable cast iron and cast copper alloy pipe fittings (screwed B.S.P. taper thread or API line pipe thread) for steam, air, water, gas, and oil. (B.S.143: 1952); and for malleable cast iron (Whiteheart process) and cast copper alloy pipe fittings (screwed B.S.P. taper male and parallel female thread) for steam, air, water, gas, and oil. (B.S.1256:1952). They have been revised with a view to simplifying the range of sizes of fittings and to provide only for those sizes of fittings in common use. These standards specify the standard dimensions of plain and reinforced malleable cast iron and cast copper alloy pipe fittings suitable for working pressures up to 200 lb. per sq. in. in the case of water, and up to 150 lb. per sq. in. in the case of steam, air, gas and oil. Copies may be obtained from the British Standards Institution, Sales Branch, 24, Victoria Street, London, S.W.1, price 7s. 6d. each.

SOUTHERN REGION LECTURE & DEBATING SOCIETY.—Mr. L. J. Boucher, Signal & Telecommunications Engineer, Southern Region, will read a paper on "Modern Railway Signalling" at a meeting of British Railways, Southern Region, Lecture & Debating Society, to be held at the Chapter House, St. Thomas's Street, S.W.1, at 5.45 for 6 p.m. on October 30.

NEW RAILWAY IN N.W. SPAIN.—General Franco has opened a 70-mile stretch of the railway that is to link Zamora with Corunna, 288 miles. More than half the line has now been laid. He opened the new station of Puebla de Sanabria and a viaduct over 300 yd. long across the river Elsa, also a junction station at Orense. The General Manager of the R.E.N.F.E. announced at the opening ceremony that the present plan to spend £120 million on modernising the railways allows for the electrification of nearly 1,000 miles of line, and will reduce the coal consumption after 1958 by a million tons a year.

EUROPEAN STEEL OUTPUT MAINTAINED.—Crude steel production in Europe (excluding U.S.S.R.) during the second quarter of 1952 substantially maintained the record rate attained during the first quarter of the year, according to the latest issue of the *Quarterly Bulletin of Steel Statistics* published by the United Nations Economic Commission for Europe. It is estimated that during the second quarter of 1952, Western European crude steel production was at an annual rate of about 61·90 million *tonnes*, against a rate of 62·42 million *tonnes* during the first quarter. The slight decline is accounted for by the holiday period. The U.S.A. figures, given for purposes of comparison, reflect the loss of production through the recent strike in the American steel industry. The July figures show a notable increase in production in Western Germany and a downward trend in Belgium and Luxembourg.

Southern Region Colour-Light Signalling



Relay room at new Streatham Junction box

Signalling floor of Clapham Junction "B" box

Collision at Harrow & Wealdstone, London Midland Region

North end of Harrow & Wealdstone Station after the accident on October 8 (see editorial note on page 422). The two locomotives lying on their sides are those of the 8 a.m. Euston—Manchester express, Nos. 45637 "Windward Islands" (left) and 46202 "Princess Anne"

RAILWAY NEWS SECTION

PERSONAL

Mr. H. S. Knott, Traffic Manager, Great Northern Railway (Ireland), has been elected President of the Belfast Chamber of Trade. He is the first President of the Chamber to be supplied by the transport industry.

Mr. George S. Cowie, Assistant Treasurer, Canadian National Railways, who, as recorded in our August 1 issue, has been appointed Treasurer, is a native of Insch, Aberdeenshire, Scotland. He received his financial training in several branches of the North of Scotland Bank Limited, from which he resigned in 1921 to go to Canada. The same year he began service at Toronto as clerk in the Treasurer's Office of the Canadian Government Merchant Marine Limited and the Grand Trunk Pacific Coast Steamships. He became chief clerk the next year, and in 1923 went to Montreal as Assistant Treasurer of the Canadian Government Merchant Marine. In 1929 he was appointed Assistant Treasurer of the Canadian National Railways, including C.N. Steamships and the C.G.M.M. Limited. He has been Assistant Treasurer of Trans-Canada Air Lines since its inception in 1937.

Mr. C. D. Cowie, who, as recorded in our July 18 issue, has retired as Vice-President & Treasurer of the Canadian National Railways, was born in Scotland. He went to Canada in 1908 and joined the Canadian Northern Railway as a clerk at Toronto in 1910. Following service as a cashier he did special work for the Royal Commission on Railways in 1916 and for the Canadian Northern Arbitration Board in 1917. In 1918 he was appointed Assistant to the Vice-President, at Toronto, and on the formation of the Canadian National Railways in 1923, was transferred to Montreal to take up the position of Assistant to the Vice-President in charge of Finance. Mr. Cowie became Treasurer in 1932 and Vice-President & Treasurer in 1945.

Mr. Arne Sjöberg, Chief Research Economist, Swedish State Railways, who, as recorded in our September 19 issue, has been appointed to the new post of Director of Finance & Economics, is 42. His duties will cover research, planning, co-ordination and control of the economic matters in railway management. He joined the Swedish State Railways in 1930 and after graduating from the Railway School and obtaining station and Headquarters' office experience, served in the Operating, Freight Traffic, Tariffs and Finance Departments of the State Railway Board. In 1934-35 he studied with the German Railways and at Berlin Technical University and subsequently went to Upsala University, where in 1942 he graduated as M.A. (Economics). In 1942 he was appointed Research Economist to the Railway Board and in 1945 became Chief Research Economist. Mr. Sjöberg has served in various capacities with Government Committees on rationalisation of the State Railways, 1941-44; Swedish transport policy, 1944-47; railway cost calculation methods, 1942-49; revision of tariffs of the State Railways, since 1948; and the organisation and administration of the State Railways, 1947-49. In 1946 he went on a Government mission to U.S.A. to study American experience on railway tariffs and cost finding. He also was a member of the O.E.E.C. Technical Assistance Mission to the U.S.A. this year, which went to study the organisation and regulation of inland transport. He has taken an active part as a member of the International Railway Union's Sub-committee on cost finding and also as reporter and special reporter to the meetings of the International Railway Congress Association in Rome, 1950, and in Stockholm, 1952.

Mr. T. E. Jackson, Assistant (Claims) to Commercial Superintendent, London Midland Region, who, as recorded in our September 12 issue, has been appointed District Goods Superintendent, London Bridge, Southern Region, was born in Derby. He entered the service of the Midland Railway in the Chief Goods Manager's Office in 1915 and after service in various sections of that office, became a member of the Chief Goods Manager's personal staff. Mr. Jackson was promoted to Euston in 1925 following the formation of the Chief Goods Manager's Department of the L.M.S.R., and in 1931 was appointed deputy head of section in the Accommodation, New Works & Tenancy Section, C.G.M.O. In 1934 he was promoted to the Goods Revenue Expansion Section in the Chief Goods Manager's Office, L.M.S.R., and in 1936 was appointed Relief Goods Agent, London District. In 1937, Mr. Jackson became Goods Agent, Rochdale, after a short period as Chief Clerk at Curzon Street, Birmingham, and in the following year attended the inaugural course at the L.M.S.R. School of Transport, Derby. He became Goods Agent, Oldham Road, Manchester, in 1942 and Operating Assistant to the District Goods Manager, Manchester in 1943. Mr. Jackson was appointed Assistant District Goods Manager, Bolton, in 1944; Assistant District Goods Manager, Manchester, in 1947; and Assistant (Claims) to the Chief Commercial Manager, L.M. Region, in 1948.

Mr. George S. Cowie
Appointed Treasurer of the Canadian National Railways

Mr. Arne Sjöberg
Appointed Director of Finance & Economics, Swedish State Railways

Mr. T. E. Jackson
Appointed District Goods Superintendent, London Bridge, Southern Region

London Midland Region Staff Changes

The following staff changes are announced by British Railways, London Midland Region:—

Mr. A. Jones, Assistant to Commercial Superintendent (Passenger), Euston, to be Chief Assistant to Commercial Superintendent (Passenger), Euston.

Mr. J. Rhodes, Goods Agent, Longton, to be Assistant to District Commercial Superintendent, Stoke-on-Trent.

Mr. H. G. Rampling

District Superintendent, Norwich, L.N.E.R., and District Operating Superintendent, Norwich, Eastern Region, 1942-52

Mr. J. Bonham Carter

Appointed District Operating Superintendent, Norwich, Eastern Region

The late Mr. M. H. Sifton

Assistant for Commercial Investigation, London Midland Region, British Railways

Mr. H. G. Rampling, District Operating Superintendent, Norwich, Eastern Region, who, as recorded in our September 19 issue, has retired, entered the service of the Great Eastern Railway in 1901 at Ipswich. From August, 1914, to June, 1919, he served with the Forces. He resumed duty as Chief Staff Clerk in the District Superintendent's Office, Ipswich, in 1919 and in 1926 was transferred to Stratford District Superintendent's Office. Following appointments in the Chief General Manager's Office at Kings Cross and in the Advertising Manager's Office, he became Chief Clerk in the District Superintendent's Office at Stratford in 1930 and Chief Assistant, District Superintendent's Office, Edinburgh, in 1931. Mr. Rampling was appointed Assistant District Superintendent, Norwich, in 1934; Acting Assistant to the Superintendent, Southern Area, in 1941; and District Superintendent, Norwich, in 1942, a post which was redesignated as District Operating Superintendent in 1950.

Squadron-Leader H. J. D. L. Walmsley has resigned from the board of Railway & General Engineering Co. Ltd.

Mr. Ernest Prebble, M.I.C.E., Assistant Engineer (Permanent Way), L.M.S.R., 1928-29, whose death we recorded briefly in our October 10 issue, was articled for three years as an engineering pupil with Professor Henry Adams and served the latter part of his time with the L.N.W.R. on the Stockport Viaduct widening and construction of new works in that district. In 1896 he was appointed Chief Assistant to the Resident Engineer on construction of a section of the Heaton Lodge and Wortley railway in Yorkshire, and on its completion was engaged as Resident Engineer on New Works in the Leeds district. In 1903 he became Divisional Engineer of the Central Division of the L.N.W.R. at Crewe. He was transferred as Divisional Engineer to the Manchester & Yorkshire Division in 1910 and in 1921 took over the Southern District at Watford. Mr. Prebble became Assistant Engineer (Permanent Way) in 1928 and retired the following year.

Mr. J. Bonham Carter, Assistant District Operating Superintendent, Nottingham (Eastern Area), London Midland Region, who, as recorded in our September 19 issue, has been appointed District Operating Superintendent, Norwich, Eastern Region, joined the L.N.E.R. as a traffic apprentice in 1936. In January, 1939, he was appointed Supernumerary Assistant Yardmaster at Carlisle and in July, 1939, Clerk, Chief General Manager's Office, Rates & Statistics, Kings Cross. He joined the Forces in September, 1939, and served in the Royal Tank Regiment throughout the war; he was awarded the D.S.O. and twice mentioned in despatches. He also served for a period after the war in the Royal Engineers (Transportation) Supplementary Reserve. Mr. Bonham Carter resumed duty in March, 1946, as Assistant to the District Superintendent and District Locomotive Superintendent, Newcastle, to which post he was appointed in 1945 whilst still in the Forces. In September, 1946, he was appointed Assistant District Passenger Manager, York, and in January, 1948, took over the post of Assistant District Goods Manager, Manchester, which he held until November of that year, when he was appointed Assistant District Superintendent, Manchester. He became Assistant District Operating Superintendent, District Superintendent's Office, Nottingham, in 1950.

Mr. C. F. Barnard has been appointed General Manager of Mirrlees, Bickerton & Day Limited. Mr. J. T. Rymer has resigned as Managing Director.

Mr. F. L. Timmins, General Manager of the British Automatic Co. Ltd., has been elected to the board of Directors and appointed Assistant Managing Director. The position of General Manager is not being filled.

Mr. C. B. Clapham, Assistant Secretary, Road Passenger Executive, has been transferred to London Transport as an Officer of the Executive with the title of Assistant to the Works Manager (Buses & Coaches), in the Department of the Chief Mechanical Engineer (Road Services).

We regret to record the death, in the accident at Harrow & Wealdstone on October 8, of Mr. M. H. Sifton, Assistant for Commercial Investigation, London Midland Region. He was born in 1894, and educated at King Henry VIII Grammar School, Abergavenny. He entered the L.N.W.R. service in the District Goods Manager's Office at Broad Street in 1911 and joined the 3rd battalion, Monmouthshire Regiment (T.F.) at the outbreak of war in 1914. After serving in France and Belgium, he returned to the railway service in 1919. Mr. Sifton was appointed assistant in the then newly-formed development section of the Chief Goods Manager's Office in 1923, and in 1927 he became head of section in that office, responsible for warehousing and tenancy work (later for all new works matters). He was appointed Assistant District Goods Manager, Warrington, in 1936, Assistant District Goods Manager, Leeds, in 1938, and Research Assistant to the Commercial Superintendent in 1945; he later became Assistant for Commercial Investigation, London Midland Region.

Mr. T. Dawson has been appointed Assistant Publicity Manager of Leyland Motors Limited.

Mr. G. E. Chicken and Mr. C. Hipwell have been appointed Directors of Dorman Long & Co. Ltd. Messrs. S. Barlow, James Jack, and J. H. Patchett have been appointed Special Directors.

Mr. W. Barnes, Divisional Signalling Assistant at Hunts Bank, Manchester, London Midland Region, has retired after over 47 years' service in the same office. On September 25 he was presented with an illuminated address, having more than 100 signatures of technical, clerical and supervisory staff, together with a clock and a pair of field glasses, by Mr. S. Williams, Signal & Telecommunications Engineer (formerly Divisional Engineer, Manchester). On the amalgamation of the Signal & Telecommunications Departments in 1929, the Manchester Divisional Office was constituted and an interesting feature of the presentation was the

attendance of the first Divisional Engineer, Mr. W. R. Jones, and his four successors, Messrs. S. W. Spendlove, S. Williams, E. G. Brentnall, and the present Divisional Engineer, Mr. C. G. Derbyshire. Mr. R. O. Banister, Divisional Operating Superintendent, Manchester, also was present.

Vickers Limited has announced that Viscount Knollys has been appointed an additional member of the board of Directors.

We regret to record the death, at the age of 78, of Mr. J. J. Hughes, M.Inst.T., Chairman, Trader's Co-ordinating Committee on Transport, 1931-50.

Mr. W. H. Pilkington has been appointed Deputy-President of the Federation of British Industries. He is Chairman of Pilkington Brothers Ltd. and a Director of its subsidiaries at home and overseas.

Dr. Maurice Hegarty has been appointed Chief Medical Officer of Coras Iompair Eireann, in succession to the late Dr. C. J. O'Reilly. Dr. Hegarty joined the service of the Dublin United Tramway Company in 1943 and helped in the launching of that company's Staff Medical Welfare Scheme.

Alderman G. H. Jones, Deputy Chairman of the West Midlands Divisional Coal Board, has retired, and has accepted an invitation to remain a part-time member. His successor will be Mr. T. S. Charlton, Production Director of the South-Western Division at Cardiff.

Imperial Chemical Industries Limited has announced that Major J. W. Bansall, Division Education Officer since 1945, has retired after 31 years at Billingham. His successor as Education Officer is Mr. J. J. Etridge, who has been Manager of the Drikold section of the ammonia works.

Mr. D. M. Jenkins has been appointed Chief Engineer of General Motors Diesel Limited, in succession to Mr. D. J. Smilanich, who has completed his assignment in Canada and has rejoined General Motors Electro-Motive Division at La Grange, Illinois. Mr. Jenkins was formerly Assistant Chief Engineer.

Mr. J. S. H. Grant, O.B.E., whose death we recorded briefly in our October 10 issue, was a former Vice-Chairman of the Rhodesia Railways Board. He was born in Dundee, Scotland, in 1884, and served on the railways in Scotland and South Africa. He joined the Cape Government Railways in the General Manager's Office in 1903 and in 1923 became Parliamentary Assistant of the South African Railways. In 1929 he joined the Railways Commission in Rhodesia as Secretary, and in 1940 became Chairman. On the state acquisition of the Rhodesia Railways and the transfer in 1948 of the board of Directors from London to Rhodesia, he was appointed a Director and acted as Chairman from January, 1948, to August, 1948. He was appointed a member and a Vice-Chairman of the Railways Statutory Board under the 1949 legislation, a position from which he had retired. At the time of his death he was a trustee of the two Rhodesia Railways Rhodesia Pension Funds. Mr. Grant was awarded the O.B.E. in 1946. He was the first Honorary Secretary of the Institute of Transport in South Africa (1926), and a Fellow of the Royal Geographical Society.

Centenaries Exhibition at Kings Cross

Display of modern and pre-Grouping rolling stock, models, photographs and documents

The culminating feature of the celebrations held this year to commemorate the centenary of Kings Cross Station and the opening of the important section of the former G.N.R. main line, known as the "Towns Line," from Peterborough to Retford, is an exhibition which is being staged by British Railways at Kings Cross Station between October 13-18. A preview and official inspection of the exhibition was opened on October 10 by Mr. C. K. Bird, Chief Regional Officer, Eastern Region; also among those present were:—

Sir Michael Barrington-Ward, General Sir Daril G. Watson, Members, Railway Executive; Messrs. E. G. Marsden, Secretary, Railway Executive; H. Adams Clarke, Chief Officer (Staff & Establishment), Railway Executive; D. F. Gowen, Executive Officer (Salaried Staff), Railway Executive; W. B. Richards, Chief Officer of the British Transport Commission Police.

A small exhibits section includes various models of locomotives, a working model railway, timetables, tickets, pictures and postcards. There are two 50 ft. to one in. surveys of Kings Cross Station, one dated 1898 and the other very much earlier, but undated. Other original drawings are of the Sturrock steam tender and early carriages.

The outdoor exhibition is made up of both locomotives and carriages. Coupled to a British Railways standard third class coach is an East Coast Joint Stock third class clerestory corridor coach in pre-Grouping livery. A British Railways standard kitchen car and G.N.R. dining car are on show with specimens of old plate and glass. The three locomotives exhibited are: "A4" class 4-6-2 No. 60022, *Mallard*; Stirling 4-2-2 No. 1; and Ivatt Atlantic No. 251 (the last two from York Museum).

Admission to the exhibition is 1s. for adults and 6d. for children under 14. Tickets are in the form of a railway ticket in the old G.N.R. colour and they are dated, at time of admission, on one of the original Edmundson railway ticket dating machines. Tickets are cancelled with a pair of G.N.R. ticket clippers; they can be retained as collector's pieces. The exhibition is open daily between 10 a.m. and 8 p.m. Further reference to the centenary is made in an editorial elsewhere in this issue.

Bridge Reconstruction in Jugoslavia

In Jugoslavia, 254 of a total of 419 railway bridges exceeding 100 ft. in length were destroyed during the war, and 60,000 tons of steelwork lay on river beds. During the first period of reconstruction, from the end of hostilities to the end of 1945, efforts were concentrated on rapidly restoring the most important river crossings, if necessary by emergency structures composed of any materials available.

In spite of the precarious situation of the country after the war, railway communications were speedily restored. Hostilities in Northern Jugoslavia ceased on May 9, 1945. Railway connection with Trieste was re-established on July 12, and with the Jugoslav port of Rijeka-Susak on

General Sir Daril Watson, Sir Michael Barrington-Ward and Mr. C. K. Bird at the Kings Cross Centenaries Exhibition

August 31. At the end of November, traffic was restored on a second branch, connecting the port of Ploce with its hinterland. With the renewal of the bridge over the River Save near Belgrade (on December 31, 1945) the connection between Western Europe and Istanbul was re-established.

The second phase of reconstruction, from January, 1946, onwards, covered the more thorough reconstruction of railway bridges on a semi-permanent or permanent basis.

Design of Wagon and Cartage Sheets

Technical Committee Appointed

Science and industry are collaborating with British Railways to help in applying modern manufacturing technique to the production of waterproof sheets used for the protection of traffic by rail and road. The problem has been under study for some time by the railways, and substantial progress has already been made on cartage sheets; a new type of sheet, made from 19/20 oz. canvas with a chemical emulsion proofing, has been adopted as standard for the bulk of railway cartage requirements.

Wagon sheets, however, are made from a canvas dressed with a compound of linseed oil and bauxite. The sheets have good waterproof properties, but they are heavy and cumbersome to handle and tend to become hard or sticky in use; they are also expensive in repairs. At the invitation of the Railway Executive, leading experts from scientific organisations, trading associations and important industrial undertakings have promised their co-operation in studying the problem and a special technical committee has been set up, the constitution of which is shown below.

At the first meeting of the committee held in London recently, Mr. A. Forbes Smith, Chief Officer (Stores), Railway Executive, said that the Executive warmly welcomed the co-operation which was so readily given by the interests represented. The problem was not an easy one, because of the exacting conditions of railway traffic. It was also of some magnitude, for on this side of their business the railways every year used some five million yards of cloth and spent some £2½ million.

Constitution of Committee

The representatives of the various interests on the committee are as follow:—

Railway Representation: Mr. F. Fancutt, Superintendent of Chemistry Division, Directorate of Research, the Railway Executive, Euston Square; Mr. C. G. Winson, Superintendent of Textiles Division, Directorate of Research, the Railway Executive, Derby; Mr. H. Cheetham, Assistant Stores Superintendent, Eastern & North Eastern Regions, the Railway Executive, Kings Cross, N.W.1.

Scientific Representation: Mr. J. Pollitt, British Cotton Industry Research Association; Dr. A. J. Turner, Director of Research, Linen Industry Research Association.

Trading Associations: Mr. C. Ashton (James Stott Ltd., Oldham), Cotton Canvas Manufacturers' Association; Mr. H. Keith Cockcroft, (John Cockcroft & Sons Ltd.), Cotton Spinners & Manufacturers' Association; Mr. T. Hogarth McLaren (Baxter Bros. & Co. Ltd.), Flaxspinners' and Manufacturers' Association of Great Britain; Mr. J. Howard (Dux Chemical Solutions Co. Ltd.), Mr. P. A. Smith (Wm. Smith (Poplar) Limited), Association of Heavy Textile Proofers of Great Britain.

Industrial Representation: Mr. W. Baker, Imperial Chemical Industries Limited, Leather Cloth Division; Mr. T. McQuillen, James Williamson & Son Ltd.

Harrow & Wealdstone Accident: Press Arrangements

How news was handled in the L.M.R. Press Section at Euston

The first news of the accident at Harrow & Wealdstone Station, London Midland Region, which took place at 8.20 a.m. on October 8, reached the Press Section of the office of the Public Relations & Publicity Officer, L.M.R., at Euston House, at 8.34, 14 minutes afterwards. For the following account of the procedure adopted in the section we are indebted to information supplied by Mr. George Dow, Public Relations & Publicity Officer, L.M.R. Immediate check was made with the Accident Section of the Regional Operating Superintendent and the facts confirmed. Within three minutes this confirmation had been telephoned to the three London evening newspapers and the news agencies.

Meanwhile telephone and messenger contact was being made with the Personal Injuries Section of the Commercial Superintendent, London Midland Region, to obtain minute-to-minute details of injuries, and similar arrangements with the Passenger Train Section of the Operating Superintendent for changes in train services. The Accident Section was then contacted again to ensure that fuller details of the accident would be forthcoming at brief and regular intervals.

Within 30 minutes of the first news, representatives of the news agencies and newspapers were established in a room adjacent to the Press Section and were given information immediately it came in and had been collated. They were given free use of office telephones (other than those of the Press Section) with which they could contact their respective offices. At the same time the recently established District Public Relations & Publicity Offices at Manchester and Liverpool were given the facts.

News was supplied to the press and to the British Broadcasting Corporation minute by minute continuously for five days and nights, for long periods of which the three Press Section telephones were dealing with up to three calls a minute from newspapers all over the country. These calls mostly concerned particular aspects of the accident, such as signalling methods, names of the locomotives involved, confirmation or denial of the many rumours which reached newspaper offices from unreliable sources, and the names and personal details of railwaymen involved in the accident; they were all handled promptly, largely because of the collaboration of the railway departments concerned.

Simultaneously, interviews and facilities were given to feature writers of newspapers on subjects such as the railway organisation for dealing with accidents, signalling, and railway ambulance organisation. Facilities for newsreel, television, and photographic agencies also had to be provided. Most of the enquiries from members of the public as to the safety of relatives were dealt with by the Personal Injuries Section, but any calls which came through to the Press Section were answered direct.

The circumstances of the accident resulted in an unusually heavy pressure, for not until the fourth day was it possible to state definitely that the last body had been removed. The fact that the disaster occurred so near to London did, however, reveal one advantage; very soon after the accident several officers, from Mr. J. W. Watkins, Chief Regional Officer, downwards, were on the spot and could give press representatives authoritative information.

Harrow Accident: Expressions of Sympathy

Messages of sympathy with the relations of the dead and with those injured in the collision at Harrow & Wealdstone, L.M.R., on October 8, were sent by The Queen, Queen Elizabeth the Queen Mother, Queen Mary, and the Prime Minister, Mr. Winston Churchill, to the Minister of Transport, Mr. A. T. Lennox-Boyd. Expressions of sympathy were received from a number of Heads of States and foreign Governments.

Among the many messages received by Mr. John Elliot, Chairman of the Railway Executive, were telegrams from the Minister of Transport, the Chairmen and Members of other Executives of the British Transport Commission, the Chairman and the General Manager of Coras Iompair Eireann, and the Presidents or General Managers of the Belgian National, French National, German Federal, Luxembourg National, Netherlands, Spanish National, and Swiss Federal Railways, and the Régie Autonome des Transports Parisiens; messages also were received from the Chairman of the National Coal Board, the Chairman of the London Branch of the Institute of Shipping & Forwarding Agents, the Secretary General of the Institute of Directors, and the President of the National Farmers' Union.

Memorial Services

Cardinal Griffin, Roman Catholic Archbishop of Westminster, was present at a service at St. Aloysius Church, London, N.W.1, on October 13. Among the congregation were Mr. F. A. Pope, Member of the B.T.C.; Mr. J. O'Neill, a Chief Officer of the Railway Executive representing Mr. J. W. Watkins, Chief Regional Officer, and Mr. R. Simpson, Regional Staff Officer, London Midland Region.

The Bishop of London conducted a service in Holy Trinity Church, Wealdstone, on October 15, which was broadcast.

A railwaymen's memorial service is to be held in St. Marylebone Church, N.W.1, at 11 a.m. on October 23, attended by senior officials of the B.T.C. and of the Railway Executive and by Chief Regional Officers, among many grades of railwaymen. The Bishop of Stepney will give an address and Mr. J. Taylor Thompson, Civil Engineer, London Midland Region, will read the lesson. Admission will be by ticket only.

The Bishop of St. Albans will conduct a service in Watford Parish Church at 3 p.m. on October 26, for the dead of the Watford and King's Langley areas.

REFERENCE BOOK ON AUSTRALIAN INDUSTRY.—The Commonwealth Government of Australia is publishing a book entitled "The Structure and Capacity of Australian Manufacturing Industry," which will cover the whole range of the Australian secondary industry. The edition is limited; copies at £3 each will be available in the United Kingdom and Western Europe in December. Those requiring a copy should register with Angus & Robertson Limited, 48, Bloomsbury Street, London, W.C.1.

Tour of French Railway and Electrical Installations

Visit for travel agents and Press organised by S.N.C.F.

From Monday to Saturday last week a party of British travel agents and representatives of the national and technical press toured railway and electricity generating installations in France as guests of the French National Railways. This was the first week of operation of the winter timetables (reviewed in our September 19 issue), in which the main feature has been the accelerated service on the South-Eastern Region made possible by the completion on June 24 of the Paris - Lyons electrification. From October 5 there have been accelerations between Paris and Lyons ranging from 3 up to 26 min., the latter having been made in the schedule of the "Mistral" express, now extended from Marseilles to Nice and allowed 11 hr. for the whole journey.

The party left Victoria at 11 a.m. on October 6 and travelled through from Calais to Dijon in a reserved coach attached to the Calais - Vintimille portion of the 2.37 p.m. from Calais to Paris Nord, which is then worked round the Ceinture to the Gare de Lyon and leaves there for the South at 8.10 p.m. On departing from the Gare de Lyon the train consisted of 18 vehicles, hauled by a 2-Do-2 electric locomotive. Dijon was reached on time at 11.17 p.m.

On Tuesday morning the traffic and substation control rooms at Dijon were visited. In the traffic control room the party watched the functioning of the C.T.C. equipment by means of which trains are signalled over the section between Dijon and Blaisy-Bas where the tracks can be used when necessary for running in either direction. Permanent way work was in progress at one point, and down trains were being transferred to the up line in consequence. The two-direction signalling (described in our May 20, 1949, issue), combined with the indication of train movements on the illuminated diagram over the whole 16 miles, were seen to minimise delay in the passage of traffic in these special circumstances.

The substation control room at Dijon controls 19 substations from Fontaines to St. Florenten. A demonstration was given of the automatic fault warning system, which lights up the indicator lamp on the wall diagram for the apparatus affected and also illuminates a panel showing the nature of the trouble. The control turn-buttons incorporate an indicator lamp, and a brass strip which lies in line with the adjacent sections of the circuit diagram when a button is turned to close an item of switchgear or bring a rectifier into operation.

At 11.25 a.m. the party left Dijon for Annecy in the Paris—St. Gervais-les-Bains portion of the 8.10 a.m. from Paris. This part of the train is detached from the coaches for Modane and beyond at Aix-les-Bains and worked forward over the line which has been electrified with single-phase a.c. at 20 kV., 50 cycles, as far as La Roche-sur-Foron. On this occasion the train was hauled to La Roche by the Swiss-built Co-Co 50-cycle locomotive No. 6051. Members of the party travelled on the footplate from Aix-les-Bains to Annecy, accompanied by M. Maigné, Assistant Locomotive & Rolling Stock Superintendent, Chambéry. The start from Aix is made on 1,500 V. d.c.; on crossing to the single-line branch the train coasts over a "dead" section with pantograph lowered and the driver switches his equipment to 20 kV. The load on this trip was 370 tons. Motor current for most of the run was in the region of 2,000 A., a high value being characteristic of 50-cycle series motors because the voltage on each machine is only some 275 V.

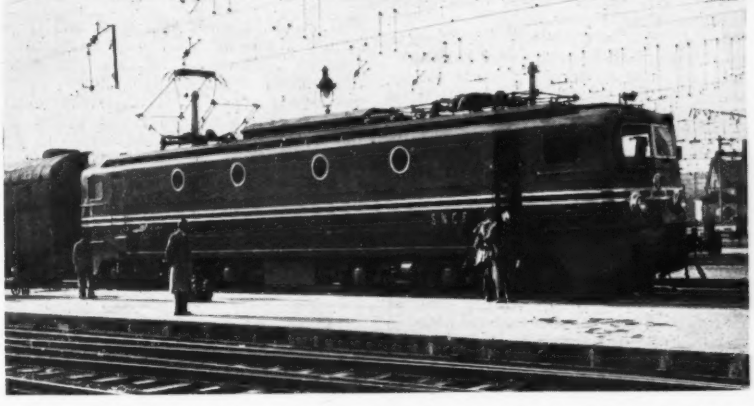
Future 50-Cycle Projects

At Annecy M. Maigné addressed the party on the present S.N.C.F. experiments with 50-cycle traction, and the administration's plans for the future. Comparing substation spacing, he pointed out that with 1,500 V. d.c. this was about 5 miles, whereas with a 50-cycle system it could be 37 miles. A 50-cycle scheme could show an economy in capital cost over 1,500 V. d.c. of 40 per cent. It was hoped to extend electrification from La Roche-sur-Foron to Annemasse and St. Gervais-les-Bains in two years. Eventually the line would be supplied through two simple transformer substations, one at La Roche and the other at Rumilly. The former could be connected direct to an Electricité de France 150 kV. line, but a new feeder would be required to serve Rumilly.

The various prototype locomotives and motor coaches now in operation had run long distances without major attention being necessary. Since entering service No. 6051 had completed 198,839 miles without the commutators having to be skimmed. The Alsthom 4,000 h.p. Co-Co with 50-cycle motors (No. 6052) had run 83,885 miles in its first year. An Alsthom locomotive with multi-anode rectifiers had so far put up a mileage of 18,641. Vehicles with ignitron rectifiers were also in service, and M. Maigné referred to the fact that each ignitron in the 800 h.p. motor coach and trailer set thus equipped weighed only 265 lb. He concluded with a short description of the various types of motive power to be used when the line from Valenciennes to Thionville is converted for single-phase 50-cycle traction in about two years' time.

In the evening the party attended a reception given by the Syndicat d'Initiative d'Annecy, and on Wednesday morning the press representatives left Annecy by motor coach to visit the Génissiat power station of the Compagnie Nationale du Rhône, near Bellegarde, where the five alternators driven by Francis type water turbines of 100,000 h.p. have an average production capacity of 1,690 million kWh. per year. Power is supplied to the Electricité de France distribution network, to which the Paris-Lyons line substations are connected, and whence they take about one quarter of the total power output of Génissiat. The French National Railways own 25 per cent. of the shares in the Compagnie Nationale du Rhône, as successor of the former P.L.M. system, which was actively interested in hydro-electric developments on the Rhône with main-line electrification in view and had a quarter shareholding when the C.N.R. was founded in 1933. The Génissiat power station is normally staffed by shifts of only five men, automatic controls of turbine speed, alternator output, and other functions being installed on an elaborate scale. After inspecting the plant, the party returned to Bellegarde by motor-coach and travelled thence by train to Lyons, where the members were met by M. Jay, District Operating Superintendent, Lyons, S.N.C.F.

The still larger Donzère-Mondragon hydro-electric undertaking of the C.N.R., due to be inaugurated officially by the President of the Republic on October 25, was inspected on October 9, the party travelling from Lyons to Montélimar by train and thence by motorcoach. The works have extended over some 17½ miles to establish a diversion channel for the river and a head of water at the power station of 72 ft. Three out of six alternators, driven by Kaplan variable-pitch turbines, are already operating. The mean



The new S.N.C.F. Co-Co locomotive No. 7101 about to leave Lyon-Perrache Station with the 9 a.m. express in which the party returned to Paris on October 10

annual production of the complete plant will be 2,000 million kWh. It is this station which would supply the traction load in the event of electrification being extended from Lyons to Marseilles.

The party was accompanied during the inspection of the scheme by M. Tournier, Assistant General Manager, Compagnie Nationale du Rhône, and M. Pascal, District Operating Superintendent, Valence, S.N.C.F. After the visit, the party returned to Montélimar by motorcoach and travelled thence to Lyons by train.

The journey to Paris on Friday was made in the 9 a.m. from Lyons, which is allowed 157 min. for the 195·7 miles from Dijon to the Gare de Lyon. A fault in the electric heating circuit of a coach made it necessary to attach a steam heating van for the first stage of the journey, but this was detached at Dijon and the run from there to Paris with 717 *tonnes* was made in an actual time of 2 hr. 28 min. at an average speed of 79·3 m.p.h. The locomotive was the new Co-Co No. 7101, first of the series developed from the two high-speed prototypes with that wheel arrangement.

In Paris the party was entertained to a farewell luncheon at the Gare de Lyon, at which M. Marois, Chief Commercial Manager, S.N.C.F., presided.

M. Marois, in a speech of welcome, said the tour had been designed to demonstrate the most modern aspects of electrification in France—the Paris-Lyons main line and the 50-cycle project. Economic use of coal was of great importance to France, and he illustrated the savings effected by S.N.C.F. electrification by showing that railway coal consumption had fallen from 13·4 per cent. of the total in France in 1938 to 8·7 per cent. in 1951, while in the same period electricity consumed on the railways had gone up from 700 million kWh. to 1,700 million kWh., or from 3·3 per cent. to 4·7 per cent. of the total. They were proud to have in the "Mistral" the fastest train in Europe. Electrification had brought the advantages of regularity and punctuality in railway working. In conclusion M. Marois expressed the sympathy of French railwaymen with their British colleagues over the accident at Harrow & Wealdstone on October 8. Statistics showed, however, that it was possible to travel by train for hundreds and thousands of lifetimes without fear of an accident.

Mr. A. C. Hardy replied to M. Marois on behalf of the press representatives.

M. Herpin, Assistant Manager, French Government Tourist Office, then made a speech of welcome to the travel agents in the party, to which Mr. H. H. Robinson, of Thos. Cook & Son Limited, replied.

Among others present at the luncheon were M. Ramée, Passenger Traffic Manager, S.N.C.F.; and M. Bernoud, Assistant Operating Manager, South-Eastern Region, S.N.C.F.

The following travel agents, press representatives, and members of the French railway and travel organisations participated in the tour:—

Travel Agents: Messrs. S. J. Aboav, Contours Limited; J. H. Blundell, Co-Operative Travel Services; W. F. Broom, Taylor & Maxwell & Bartlett Dixon Limited; F. G. Dawson, Workers' Travel Association Limited; R. H. Elton, Peltours Limited; C. A. Gibson, Dean & Dawson Limited; H. A. F. Gregg, the Hotel Plan; A. N. Hewett, Hewett's Travel Agency Limited; J. E. Howell, Polytechnic Touring Association Limited; K. Ireland, Sir Henry Lunn Limited; J. Jouault, Jules Boutin Travel Bureau; Cyril Martin, Wayfarers' Travel Agency Limited; A. Noest, Wm. H. Muller (London) Limited; G. J. Newman, Continental & Overseas Travel Agency Limited; H. A. Robinson, Thos. Cook & Son Limited; J. H. Ryan, American Express Co. Inc.; H. F. Smith, Frames Tours Limited; H. J. B. Taine, France Transport Service Limited.

Press: Messrs. C. J. Beatson, *The Engineer*: D. Campbell, Reuters Limited; B. K. Cooper, *The Railway Gazette*: L. D. Duchesne, *The Manchester Guardian*; C. Hamilton Ellis, *Modern Transport*; A. C. Hardy; F. Knowlson, *The Yorkshire Post*; M. Meth, Topical Press Agency Limited; B. Mycock, British Broadcasting Corporation; G. Norman, *The Times*; J. Foster Petree, *Engineering*; Comyn Webster, *The Glasgow Herald*; H. E. Wortham, *The Daily Telegraph*.

British Railways, Southern Region: Mr. F. J. Parkington.

French National Railways: MM. Chargeur, Hannoyer, Le Masson, Mr. E. H. Pearne, M. de Peyret.

French Government Tourist Office: Mlle Helft, M. Pelte, Mr. V. Rowe.

Coras Iompair Eireann Wages Claims

A wages claim of £1 a week and 15 per cent for salaried staff was discussed on October 2 between C.I.E. and the leaders of unions representing 17,000 of its employees. Mr. T. C. Courtney, Chairman, C.I.E., stated that the Board had increased rates and fares as much as possible and that any new wage increases would mean the dismissal of many workers. The company estimated that the cost of living had increased by 8s. a week and it was prepared to give 75 per cent of that figure to them. It was stressed that the financial position of the company was perilous and it could not see its way to giving a bigger increase. The unions were asked to examine the question carefully, and the growing competition from road transport was emphasised.

The unions decided unanimously to reject the offer of 6s. per week and the claim will now go to the C.I.E. Joint Industrial Council or the Labour Court. C.I.E. has decided to grant a special salary allowance to members of its clerical staff who are successful in the examinations of the Institution of Transport, subject to satisfactory conduct and performance of duties in the service of the Board. To graduates the allowance will be £20 a year, payable for two years and to associate members £25, and will be permanent as long as membership of the Institute is retained.

Staff & Labour Matters

Railway Staff National Tribunal

The Railway Staff National Tribunal on October 8 concluded its hearing of the three railway unions' claim for a 10 per cent increase in rates of pay, when the union advocates replied to the submissions of the Railway Executive. The decision of the Tribunal is expected to be announced shortly.

Engineering Wage Claim

The engineering unions have agreed not to implement their threatened ban on overtime and piecework which was due to begin on October 20 in protest against the employers' refusal to meet their wage demands.

The decision to call off the ban followed talks at the Ministry of Labour on October 8, during which the Engineering & Allied Employers' National Federation undertook to advise the federated associations to authorise their spokesmen to open negotiations untrammelled by instructions that no increase should be granted in any circumstances. A meeting of the employers' and unions' representatives has been arranged for October 21.

The central board of the Shipbuilding Employers' Federation discussed the parallel dispute in which they are concerned in the light of the decision reached by the engineering employers and unions, and decided on October 9 to postpone indefinitely their proposal to ban overtime and piecework. It is understood that the employers are to seek authority to open negotiations on the wages issue.

Parliamentary Notes

Harrow Accident

Mr. A. T. Lennox-Boyd, Minister of Transport, made a statement in the House of Commons on October 14 on the accident at Harrow. He said: "I regret 110 persons lost their lives. In addition 159 persons were injured, of whom 75 are still in hospital. The House will wish to be associated with the expression of deep sympathy to the relatives of those who lost their lives and those who were injured.

"I would pay a tribute to everyone who participated with such unselfishness in the prolonged and distressing work of rescue, including detachments of the United States Air Force who came so promptly to help us in our troubles."

In reply to Mr. Walter Monslow (Barrow—Lab.), who asked the Minister if he would consider the universal adoption of automatic train control, Mr. Lennox-Boyd replied that it would be wise to wait the result of the inquiry.

To a question whether the inquiry would be wide enough in scope to cover the general question of railway safety devices, Mr. Lennox-Boyd answered that the scope could safely be left in the hands of the Chief Inspecting Officer of Railways.

Mr. John Freeman (Watford—Lab.) asked that the people of Watford, who had suffered more grievously than any other community, be publicly associated with the tribute to the work of rescue.

Lord Leathers, Secretary of State for the Co-ordination of Transport, Fuel & Power, made a similar statement in the House of Lords. Lord Lucas of Chilworthy on behalf of the Labour peers associated himself with the expressions of condolence. He hoped that the report of the Chief Inspecting Officer would be made public as soon as possible.

Export Drive

Mr. R. A. Butler, Chancellor of the Exchequer, in the House of Commons on October 14, stressed the need for greater effort in the export markets.

He described the recent improvement in the balance of payments position as a "step in the right direction" towards convertibility. Part of the improvement, he said, was due to a change in the terms of trade in Britain's favour and added: "I regret myself that the balance of payments situation is not better by an improvement in the export position, towards which the country should certainly devote attention in the future if we are not only to maintain our position, but effect a lasting improvement."

Contracts & Tenders

A contract for the building of a new Canadian National Railways line in British Columbia from Terrace to Kitimat has been awarded to Campbell & Bennett Limited, Vancouver. The contract covers the clearing and grading of the 41-mile right-of-way, as well as the installation of culverts, timber bridges and concrete substructures for steel bridges, but not including the major bridge to cross the Skeena River. The new line will serve the plant now being built at Kitimat by the Aluminium Company of Canada.

Maschinenfabrik Oerlikon A.G. has received from the Belgian National Railways an order for 150 sets of multi-point electric jumper couplings for motor-coaches on the 3,000-volt d.c. electrified lines.

Siegener Eisenbahnbedarf A.G. has an order for 66 tank wagons for the broad-gauge system of the Pakistan Railways; and is busy with delivery of an order for 1,000 metre-gauge covered wagons for the Indian State Railways.

A recent Reuter's report from New York states that the Sorocabana Railway and Paulista Railway, Brazil, have ordered freight cars to the value of some $12,000,000 from the Pressed Steel Car Car Co. Inc., U.S.A.

Krupp Lokomotivfabrik has orders for several 80-ton 0-8-0 tank steam locomotives for the German brown coal industry, and for a 105-ton 2-8-2 tank engine for the heavy mineral traffic on the Köln-Bonn Railway.

Vereinigte Westdeutsche Waggonfabriken A.G. (Westwaggon) has received from the Commonwealth Railways, Australia, an order for 38 bogies of the Minden-Deutz type, with hydraulic shock absorbers, to be applied to existing coaches. These bogies are of the same type as those fitted to the Commonwealth coaches recently completed in Germany.

British Railways, London Midland Region, has announced that the following contracts have been placed:—

Redpath Brown & Co. Ltd., Manchester, 17: supply and erection of steelwork in connection with the renewal of the roof of Liverpool, Park Lane, Cotton Quay.

Bagguley & Barker Limited, Nottingham: drainage and formation renewal work on the permanent way between 64 miles 1,160 yd. and 64 miles 1,640 yd. on the Roade to Rugby line.

Leonard Fairclough Limited, Adlington: construction of a culvert under the Bridgewater Canal at Overbridge No. 50, Crewe and Warrington line.

Demolition & Construction Co. Ltd.: removal of platform roofs and station buildings at Willesden low level main-line station.

W. H. Heywood & Co. Ltd., Huddersfield: renewal of roof coverings with patent glazing at Liverpool Langton Dock goods shed.

Rede Mineira de Viacao, Brazil, has invited tenders for building and equipping a 4,200 kW. hydro-electric station near Itavera, State of Rio de Janeiro, for the electrification of part of its line.

The Board of Trade, Commercial Relations & Exports Department, has been notified of a call for tenders issued by the Ministry of Colonies, Brussels, for the supply to the Belgian Congo of narrow-gauge railway material, including tipping trucks, small quantities of track material, one diesel locomotive, and one travelling crane with pneumatic tyres.

Tenders must reach the offices of the Service des Approvisionments du Ministere des Colonies, 14, rue des Petits Carmes, Brussels, by 10 a.m. on November 13. No copy of the tender document is available at the Board of Trade, but United Kingdom manufacturers may inspect a copy at the Office of the Colonial Attache, at the Belgian Embassy, 103, Eaton Square, London, S.W.1; reference Specification No. 345 (33/52) should be quoted.

Notes and News

Crown Agents for the Colonies.—Applications are invited for the post of storekeeper required by the Nigerian Government Railway for one tour of 18 to 24 months in the first instance. See Official Notices on page 447.

Institute of Materials Handling.—The first paper to be presented to the recently formed Institute of Materials Handling will be "Handling The New Technology," by Mr. L. Landon Goodman. The meeting will be held at 7 p.m. on Friday, October 24, at the British Institute of Management, 8, Hill Street London, W.1.

Institute of Transport Visual Aids Study Group.—A meeting of the Visual Aids Study Group of the Institute of Transport will be held on Wednesday, October 22, at 6 p.m., at 80, Portland Place, London, W.1. The programme will include two films: "Inland Waterways" and "Safety on the Track," both lent by the British Transport Commission.

National Model Railroad Association.—On October 11 a special train was run between York and Doncaster for the British Region of the National Model Railroad Association, U.S.A., which held its annual convention in York during last weekend. A party of some 130 visited Doncaster Works and inspected British methods of locomotive construction.

Iron Ore Wagons for British Railways.—During the first eight months of this year British Railways carried approximately 10 million tons of iron ore, an increase of more than 900,000 tons compared with the same period in 1951. In 1953 iron ore carryings by rail are expected to amount to over 17 million tons, an increase of 2,800,000 tons above those in 1951. To provide for this increase British Railways is to build in its Shildon Works, 1,240 more ironstone tippler wagons of 27 tons capacity to supplement the present stock of 2,300 wagons of this type and the existing fleet of hopper wagons.

Canadian Pacific Railway Dividend.—In a circular to holders of Canadian Pacific Railway Ordinary stock resident in Great Britain and Northern Ireland, the company states that credit in respect of the Canadian tax applicable to the dividends of the company is allowable for the year 1951-52 against the United Kingdom income-tax chargeable on those dividends. The rate by reference to which credit may be claimed on the dividends is 9s. 3d. in the £ (which takes account of the Canadian non-residents' tax of 15 per cent.) or the stockholders' personal rate of United Kingdom income-tax computed in accordance with the provisions of paragraph 5 of the ninth schedule to the Finance Act, 1947, whichever is the lesser. Holders of shares on the London register should note that for the above-mentioned year a provisional amount of credit at the rate of 3s. in the £ has already been allowed by deduction of United Kingdom income-tax at the correspondingly reduced rate of 6s. 6d. in the £.

Vacancy for Deputy Divisional Transport Officer, National Coal Board.—Applications are invited for the post of deputy divisional transport officer, Scottish Division. See Official Notices on page 447.

Vacancy for Railway Shop Production Engineer.—A railway shop production engineer, between 35 and 50 years of age, is required as chief engineer by machine tool makers producing wheel lathes, axle plant, etc. See Official Notices on page 447.

Record Weekend Coal Carryings By British Railways.—Last weekend British Railways had the biggest clearance of deep-mined and opencast coal since April; during the 48 hr. ended 6 a.m. on October 13, 371,350 tons were carried, making a total of 3,172,330 tons for the week. The tonnage of iron and steel conveyed from the principal steelworks during the week ended October 4 was 209,333 tons.

Awards to Eastern Region Staff.—At a ceremony held at Liverpool Street Station on Thursday, October 2, six members of the staff of the Eastern Region were presented by Mr. C. K. Bird, Chief Regional Officer, with awards for acts of gallantry. Porter L. B. Seaton of Keadby, and Driver J. S. Stoakes of Gunness, both received cheques and framed certificates of commendation. Cash awards and certificates were also presented to Head Shunter Fairchild of Barking, Porter A. E. Baxter of Dagenham, Driver F. W. Feavor of Plaistow and Checker H. Bacon of Bethnal Green.

G. A. Harvey & Co. (London) Ltd. Housing Estate.—Prentiss Court, an extension to the G. A. Harvey & Co. (London) Ltd. Harvey Gardens housing estate, was opened by Mr. Harold Macmillan, Minister of Housing & Local Government, on October 3. The new estate, which has been named after the late Dr. Howard Prentiss, the company's first Medical Officer, comprises 32 dwellings to provide accommodation for employees. Prentiss Court is situated at Charlton, S.E.7, and includes houses, maisonettes, and flats.

Pacific Great Eastern Extension.—Announcing its determination to push ahead with extension of the Pacific Great Eastern Railway from Squamish to Vancouver, the British Columbia Government has intimated that it will ask the Legislature next Spring to vote $10,000,000 for the purpose. The Minister for Railways said that the central and northern divisions of the line, which is owned by the Government, were bringing in so much business that the barge fleet carrying freight between Squamish and Vancouver was unable to keep pace. The new 80-mile northern extension of the line from Quesnel to Prince George is expected to bring in much more business to the railway, which in 1951 made the first operating profit in its history.

Central Wagon (Holding) Company Distribution.—The board of the Central Wagon (Holding) Company announces that it proposes to convene as soon as possible an

extraordinary meeting of shareholders to authorise a capital distribution of £2 10s. nominal amount of British Transport 3 per Cent. Guaranteed Stock, 1968-73 per £1 share.

Tecalemit Contribution to Lynmouth Fund.—The company and the employees of Tecalemit Limited have contributed the sum of £150 to the Lynmouth Relief Fund.

Change of Address—The office address of Arthur Kremer Plywood & Veneers Limited has been changed to 8, Park Street, London, W.1. Telephone Grosvenor 8316.

Swiss Participation in Indian Coachbuilding Factory.—An agency message from New Delhi states that under an agreement likely to be completed this month, three Swiss firms will participate in the establishment of a railway coachbuilding factory at Perambur, near Madras.

Scottish Bus Fare Increase Sought.—Mr. James Amos, Chairman of the Scottish Omnibus group, has announced that an early application will be made to the licensing authority for an increase in single fares, possibly up to 9d., as a result of the recent award of a wage increase of 7s. a week to some 100,000 workers employed by private bus companies and undertakings controlled by the British Transport Commission.

Railway Students' Association.—Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, has accepted the office of President of the Railway Students' Association for the session 1952-1953. The opening meeting of the session will take place at the London School of Economics on Wednesday, October 29, commencing at 6.30 p.m., when Mr. Hopkins will deliver his Presidential Address to the Association. The chair will be taken by the retiring President, Mr. C. K. Bird, Chief Regional Officer, Eastern Region.

Morgan Crucible Sales Expansion.—Mr. P. Lindsay, Chairman of the Morgan Crucible Co. Ltd., commented in his statement circulated with the report and accounts on the expansion in sales and profits during the first eleven months of the year ended March 31, 1952. They had shared, he said, during the last two trading years in a trade boomlet, the peak of which seemed to have been reached at the turn of the year. Now they were in what seemed a period of transition from a sellers' to a buyers' market—a change of which there was every indication in 1949 and which the outbreak of hostilities in Korea reversed. The expansion in export sales had kept step with the growth in home demand and their export trade continued to represent a third of overall turnover. Retention of their large share of export markets would depend on keeping costs down without detriment to quality, so as to contend with competition—particularly with Germany and Japan. Mr. Lindsay criticised the law as to tax allowance for depreciation of plant, and drew attention to the reduced purchasing power of senior executives, for whom there should be incentives as for any other members of the community.

"Packaged Power."—A preview was given in London on October 13 of a 16 mm. colour sound film, "Packaged Power," produced for Aluminium Limited by Crawley Films Limited, and distributed by the Northern Aluminium Co. Ltd. The title is inspired by the massive electrical forces used to reduce alumina to metallic aluminium. Opening with scenes showing bauxite being mined in British Guiana, the film proceeds to illustrate the chemical treatment of the ore and the reduction processes at Arvida, Quebec, near the Saguenay River power developments. Ingots produced here are shipped to the United Kingdom, and an impressive sequence shows the large modern continuous strip mill at Rogerstone in operation. The film concludes with views of the project for mining and treating bauxite in British Columbia, and the new scheme for harnessing the lakes and rivers of British Columbia to produce electrical power for converting the Jamaican alumina into aluminium. With its many scenes of Commonwealth industrial activities, the film is of particular interest to men's and boys' groups, colleges, and grammar schools. The running time is 32 min.

Western Welsh Omnibus Co. Ltd.—The registered office of the Western Welsh Omnibus Co. Ltd. has been transferred from Stratton House, Piccadilly, London, W.1, to Cowbridge Road, Ely, Cardiff.

Industrial Safety Division Address Change.—As from Monday, October 6, the offices of the Industrial Safety Division of the Royal Society for the Prevention of Accidents have been transferred to 38, Millbank, London, S.W.1. Telephone: Tate Gallery 9196/9.

The Superheater Co. Ltd.—The directors of the Superheater Co. Ltd. announce that an interim dividend of 6d. per share, less tax at 9s. 6d., will be paid on October 20 next to those shareholders on the register at October 3. In making this announcement the board states that trading and orders on hand for the first eight months of the current year have been well maintained.

New Mersey Road Bridge.—The Ministry of Transport states that authority has been given for the construction of a single-tier road bridge over the Manchester Ship Canal and the River Mersey between Widnes and Runcorn, to replace the existing transporter bridge, below which the only crossing for road vehicles is the Mersey Tunnel and the Liverpool ferries.

Scottish Representation of Chamberlain Industries Limited. — Gerard Wakeham Limited, Scotitsh Representative of Chamberlain Industries Limited, has moved from Carlton House, 26, Blythswood Square, Glasgow, C.2, to 1, Clifton Street, Glasgow, C.3. This company will continue to serve customers in the Scottish Area and advise them about any of the extensive range of Staffa products.

R.H.A. Proposals for Transport Bill.—The Road Haulage Association states that it has made known to the Minister of Transport its views on the Transport Bill introduced into Parliament during the last session. The association has always supported the principle of de-nationalisation of road haulage and welcomes the embodiment of that principle in the Bill. It believes, however, that to ensure a smooth transition and to provide the service which trade and industry require at the earliest possible date, some alterations should be made in the Bill before it is reintroduced. In particular:—

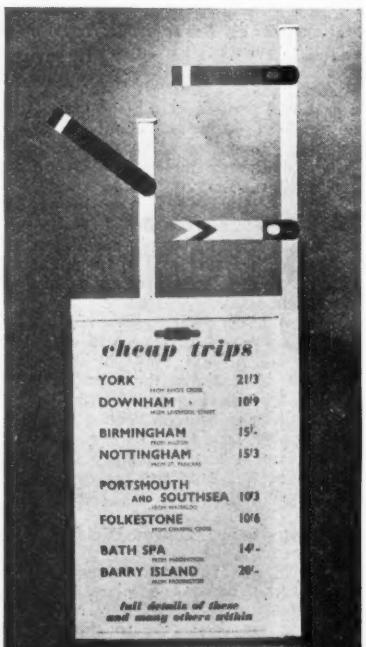
1.—The restriction of free enterprise hauliers to a radius of 25 miles should be abolished at once.
2.—Failing this, permits to exceed the 25-mile radius should be issued on a far more generous scale than at present.
3.—Reconsideration should be given to the proposed levy.

These and other points are included in resolutions to be discussed at the association's annual conference at Blackpool from October 14-17, when a comprehensive statement of policy will be made.

Welding Instruction Books.—The Quasi-Arc Co. Ltd. has published a 24-page instruction book, reference IB.2, giving information on the installation, operation and maintenance of the "TA.250" Twin-Arc welding plant, and the best Twin-Arc welding techniques for various types of joints. This process, introduced twelve months ago, is reported to have increased welding speeds by 40 to 100 per cent. in many industries, and the new instruction book will enable users to benefit still more from the process. The firm has also issued a 12-page illustrated pocket size booklet, reference "IB.3," giving instructions for the installation, operation, and maintenance of the a.c. portable arc welding plant type "ACP.300." It includes circuit and connection diagrams and recommendations for installation and inspection. Copies can be obtained on application to the company.

Steel Production: Record Forecast for 1953.—Mr. Duncan Sandys, Minister of Supply, opening the new tinplate mills at Trostre, Monmouthshire, on October 7, said that unless there were unexpected difficulties with raw materials, steel production in

Advertising B.R. Excursions



Window display designed by the Publicity Officer of the Railway Executive for issue to London area travel agents in connection with excursion advertising

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

WANTED—Early North Midland Railway and Midland Railway publications. Write in first instance stating title and year to A. J. TURNER, 56, Boulton Lane, Alvaston, Derby.

NATIONAL COAL BOARD. Applications are invited for the post of Deputy Divisional Transport Officer in the Scottish Division. The post carries a salary scale of £820 × £30 to £1,060. Applicants should have experience of the bulk movement of freight traffic by rail and a knowledge of the handling of bulk traffic at docks and by road would be an advantage. Applications giving age and full details of education, qualifications, experience and present position and salary should be forwarded to the—ESTABLISHMENTS OFFICER, 1, Eglington Crescent, Edinburgh, within 7 days.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10*s.* 6*d.*—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

CROWN AGENTS FOR THE COLONIES

STOREKEEPER required by the Nigerian Government Railway for one tour of 18 to 24 months in the first instance either (*a*) on agreement with prospect of pensionable employment at a salary in the scale £750 rising to £1,175 a year or (*b*) on temporary terms at a salary in the scale £807 rising to £1,269 a year with Gratuity on satisfactory completion of final service up to £37 10*s.* 0*d.* for each 3 months. These scales include expatriation pay. Commencing salary according to age and experience. Outfit allowance £60. Free passages for officer and wife and assistance towards cost of children's passages or their maintenance in this country. Liberal leave on full salary. Candidiates with previous Railway experience must have a good knowledge of Railway Materials and Stores. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper to the—CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1., quoting on letter M.33154.E. Applicants now serving with British Railways are eligible for secondment under terms (*a*) above and should apply through their local officers. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

APPLICATIONS are invited by well-known manufacturers of iron and steel on the North East Coast for a RAILWAY ENGINEER to supervise the installation of railway systems in connection with new works and other large scale developments. Applicants should be familiar with all modern standards of track equipment and capable of co-ordinating works' and railway contractors' staffs on site. Good salary and participation in Company's Superannuation Scheme. Reply Box 613, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20*s.* By post 20*s.* 6*d.* *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY SHOP PRODUCTION ENGINEER required as Chief Engineer by Machine Tool Makers producing Wheel Lathes, Axle Plant, etc. Applicants should be between 35 and 50 and should have had considerable practical workshop experience and up-to-date outlook on the use of high speeds, high horse powers, carbide cutting, etc., to obtain maximum production. A Pension Scheme is in operation. Applications in confidence stating age, details of experience, positions held and salary required to—BOX 626, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

Britain next year should beat the previous all-time record total of 16,250,000 ingot tons "by a substantial margin." The opening of the new mills marks the completion of the first part of the £60 million development programme of the Steel Company of Wales.

Midland Railway "3P" Tender Engines.—The withdrawal of London Midland Region 4-4-0 locomotive No. 40726 has made extinct the class "3P" tender engines of the Midland Railway. The engine was one of a class of 80, which first appeared in 1900.

Bisley Branch Tour.—The special train for the Bisley branch excursion organised by the Railway Correspondence & Travel Society for November 23, and referred to in our October 3 issue, will now leave Waterloo at 12.38 p.m. and arrive at Victoria at 4.05 p.m. instead of as previously announced.

Delayed Fish Consignment Sold by British Railways.—A consignment of Danish fish for a London restaurant has been sold by British Railways after porters at Liverpool Street refused to allow the delivery vehicles to by-pass Billingsgate fishmarket. The solicitors of the fish merchant concerned are to issue a writ against British Railways for damages.

International Motor Roads Through Europe.—The Federal German Minister of Transport, Herr Seebohm, has stated that plans are being worked out for a type of "Schuman Plan for European road transport." This would entail building three European *Autobahnen*, from Bordeaux to Hamburg, from Calais to Vienna, and from Holland to Northern Italy. German authorities point out that the existing German *autobahn* network would be an important feature in planning quicker international road transport. Various stretches of the German *autobahnen* would be incorporated in each of the three new highways.

New Profit-Sharing Scheme.—Wolf Electric Tools Limited has recently introduced a novel profit-sharing bonus, devised to underline the community of interest between capital, labour and management, and to promote the sense of partnership between them. All manual workers and clerical staff can become eligible to participate in the bonus, which takes the form of a "dividend." and individual shares are varied with normal time-work earnings and years of service with the company.

Coal Stocks Increased.—The Ministry of Fuel & Power announces that by November 1, when the winter starts officially for purposes of assessing coal supplies, stocks in Britain should reach 19,500,000 tons, against 16,000,000 tons a year ago.

British Electricity Authority Surplus.—The annual report of the British Electricity Authority shows that the undertaking had an overall surplus of about £2,920,000 in the last financial year, compared with £6.330,000 in 1950-51. The total turnover was about £264 million.

Auldgirth Station to be Closed for Passengers. On and from Monday, November 3, the passenger train service will be withdrawn from Auldgirth Station on the Kilmarnock-Dumfries main line. Passengers for Auldgirth will be booked to Dumfries, whence a frequent bus service operates. Passenger train parcels and miscellaneous traffic will continue to be dealt with at Auldgirth, and there will be no change in freight traffic arrangements.

Govan Booking and Enquiry Office.—The booking and enquiry office at Govan (Scottish Region), which in former years has been closed during the winter months, will be kept open until further notice. The office, at Govan Cross, adjacent to the goods station, is open for business between 9 a.m. and 5.30 p.m. (1.30 p.m. on Saturdays). In addition to dealing with enquiries, and the acceptance of parcels traffic, rail tickets can be purchased at Govan booking office to all points to which tickets are issued from the four main Glasgow termini.

Electrical Generation and Distribution.—Heavy electrical equipment in production for many parts of the world during the past year was mentioned by Sir Harry Railing, Chairman of the General Electric Co. Ltd., in his speech at the company's recent annual general meeting. Among the generating equipment are 30 MW. and 60 MW. turbo-alternators for power stations in South Africa, and a horizontal waterwheel alternator for Norway which will be one of the largest installed in Europe. New 132 BV. outdoor circuit breakers have been developed for overseas and home contracts. The company is supplying 48 rectifier equipments for the Southern Region frequency changeover scheme, and its associated Pirelli-General Cable Works Limited has manufactured oil-filled cable for the same project.

Glasgow Municipal Transport Loss: Nationalisation Prospect.—The estimated deficit for the current financial years on the Glasgow Transport Department undertaking, comprising buses, tramways, and the Subway is £425,000. According to a recent statement by Councillor Robert M'Allister, Convenor of the Transport Committee, the undertaking would reach the limit of its borrowing powers in the next few months; unless prompt action were taken ,it might be necessary to ask the British Transport Commission to purchase.

Silentbloc Limited: Policy of Price Stability.—Presiding at the annual general meeting on September 24 of Silentbloc Limited, Mr. H. Vezey Strong, Chairman of the company, said that combined sales rose by nearly 37 per cent.—a record turnover—but the profit margin fell by 17 per cent., reflecting the policy pursued by the board of keeping prices steady in a period of sharply fluctuating costs of material and assisting customers in every way possible to compete in export markets. The weight of taxation, he added, continued its increasingly dangerous course, sapping financial strength and depriving industry of the means to create those reserves without which enterprise in its best sense became impracticable. With income tax 47½ per cent.. profits tax 22½ per cent., and Excess Profits Levy—that ill-digested sop to Cerebus—30 per cent., it was now equal to 100 per cent., of any profits distributed in excess of those of the previous year. The report and accounts were adopted, a final dividend of 3d. a share, less tax, being approved.

Capital Reorganisation of United Railways of the Havana.—A scheme of arrangement for financial reorganisation of the loan and share capital of the United Railways of the Havana & Regla Warehouses and the debentures and debenture stock of the Havana Terminal Railroad Company, was

circulated on October 16. Details of the scheme were explained to the press by Mr. W. R. Tomkinson, Acting Chairman of the company, at a conference in London on October 15.

Mail Train in Accident in Pakistan.—Seven persons were killed and 16 injured, four seriously, in a collision on October 13 at Jhatpat, on the Baluchistan-Sind border about seven miles from Jacobabad, between the Quetta-Karachi mail train and a goods train that was being shunted. The locomotive and three coaches of the mail train were smashed. Most of the victims were women and children.

L.T.E. Northern Line City Service Alterations.—London Transport announces that from October 20 the present Northern Line service from Golders Green to Morden *via* Bank, which runs at 10-min. intervals, will be withdrawn on Mondays to Fridays during the midday period when through traffic over this section is very light. Through trains between Golders Green and the City will continue to be run up to about 10.15 a.m. and after 3.45 p.m. Between these times a regular service—at 6-min. intervals—will continue to be run between Euston and Kennington *via* the City.

Forthcoming Meetings

October 17 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. Presidential Address, "The Art of the Practical Engineer," by Sir David Pye.

October 20 (*Mon.*).—Historical Model Railway Society, at the Headquarters of the Stephenson Locomotive Society, 32, Russell Road, W.14., at 7 p.m. "A Historical Review of Railway Signalling Down to Grouping," by Mr. T. S. Lascelles.

October 21 (*Tue.*). — Anglo-Netherlands Society, at 80, Portland Place, W.1, at 5.45 p.m. "Railway Organisation & Management in the Netherlands," by Mr. F. Q. den Hollander, President, Netherlands Railways.

October 22 (*Wed.*).—Permanent Way Institution, London Section, joint meeting with Institution of Railway Signal Engineers, at the Railway Executive Headquarters, 222, Marylebone Road, N.W.1, at 6.30 p.m. "Design and Constructional Features of some Modern Signalling Installations," by Mr. O. S. Nock.

October 22 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. "Development of the Oil Fired Locomotive," by Mr. W. C. Ikeson.

October 22 (*Wed.*).—Institute of Transport, Visual Aids Study Group, at 80, Portland Place, W.1, at 6 p.m. Display and discussion of films.

October 24 (*Fri.*).—Institute of Materials Handling, at the British Institute of Management, 8, Hill Street, London, W.1, at 7 p.m. "Handling the New Technology," by Mr. L. Landen Goodman.

October 25 (*Sat.*).—Railway Students' Association. Visit to the new satellite town at Crawley, Sussex.

October 25 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to London Airport.

Railway Stock Market

Business in stock markets has remained restrained, although the start of the new Stock Exchange account brought slightly more activity in the gilt-edged and industrial sections, where buyers tended to predominate.

There has been little selling in recent weeks, the main factor influencing sentiment having been caution by buyers, and jobbers generally are not too well supplied with stock. Consequently, it is being assumed that if buyers become more in evidence, prices generally may record sharp gains. It is also being suggested that hopes of important decisions at the Commonwealth Conference next month may provide a stimulus. The assumption also prevails that over a period, British Funds are likely to move in favour of holders, though it is being suggested that before the end of the year, both British Transport and British Electricity may make new issues.

With Parliament reassembled, political controversies are more in the picture, with the limelight expected to centre on road haulage denationalisation and the Government plans for denationalising steel. Details of the latter, anticipated next month, will be awaited with much interest in the City.

It is widely expected that existing engineering and kindred companies will have an opportunity to reacquire their former steel assets. This would, of course, be of considerable importance to Vickers, Cammell Laird, Guest Keen, Staveley, and John Brown. The big query is whether these and similar companies would have to raise additional capital to do this. Some have, of course, disposed of the steel stock issued as nationalisation compensation, though others, such as Vickers and Cammell Laird have not, and are unlikely to require more capital to buy back their steel assets. It is realised, however, that the City may not be right in its assumptions and that details of the steel denationalisation scheme have to be awaited.

There was less business reported in foreign rails, though there was again a fair amount of activity in United of Havana stocks, but prices fluctuated moderately, awaiting the capital reorganisation scheme. United of Havana 5 per cent (1906) debentures were lower on balance at 17¼, while the 5½ per cent Cuban Central debentures changed hands around 10½.

Elsewhere, rather more attention was given to Dorada railway stock, dealings in which were up to 46. Costa Rica stocks remained firmer under the influence of the trend in traffics; the ordinary stock transferred around 5¾. Business around 2s. was marked in Barranquilla 10s. shares, and in Paraguay Central 6 per cent prior debentures up to 21½.

White Pass & Yukon issues remained active and firmed up after reflecting moderate profit-taking. The common shares strengthened to $23¼, and the 5 per cent convertible debentures were £80½. Canadian Pacific have been firmer at $61¼, with the preference stock £64½ and the 4 per cent debentures £80½. Algoma Central 5 per cent debentures recorded dealings up to $255.

Manila Railway issues were dealt in around the same levels as a week ago, the "A" debentures being 79, the "B" debentures 64½, while the preference shares were 8s. 6d.

There was again a fair amount of business in Antofagasta preference stock around 50½, while the ordinary stock was 10¾, and yield considerations again tended to draw attention to the 5½ per cent (Bolivia) debentures, which marked around 71¼.

Brazil Rail bonds strengthened to 7, Mexican Central "A" debentures were 70, San Paulo 10s. shares have been firmer at 11s. 1¼d. with Taltal shares 15s. and Nitrate rails easier at 18s.

In the engineering and kindred sections the tendency was firmer, though movements on balance have been small and indefinite. T. W. Ward weakened to 73s. 10½d. despite the good profits, the unchanged 20 per cent dividend being below best market expectations. Guest Keen strengthened to 54s., Vickers were 43s. 6d., Cammell Laird 5s. shares 11s. 9d., John Brown 44s. 10½d., and Staveley 79s. 6d. Babcock & Wilcox held their recent rally to 72s.

Beyer Peacock have been firm at 31s. 4½d., Vulcan Foundry were 23s. 6d., Gloucester Wagon 10s. shares 12s. 4½d., Charles Roberts 5s. shares 21s. 9d., and Wagon Repairs 5s. shares 12s. 9d. Birmingham Carriage were 32s. 6d., while at Glasgow Hurst Nelson (47s. 6d.) lost a few pence of the advance they have shown in recent weeks.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week, or month ended	Traffics for week: This year	Traffics for week: Inc. or dec. compared with 1950/51	No. of week	Aggregate traffics to date: Total 1951/52	Aggregate traffics to date: Increase or decrease
South & Cen. America	Antofagasta ...	800	3.10.52	£ 163,530	+ £ 24,270	40	£ 6,078,710	+ £ 1,322,470
	Costa Rica ...	281	Aug., 1952	c1,393,110	+ c97,299	9	c2,856,268	+ c287,598
	Dorada	70	Aug., 1952	38,470	+ 1,494	35	273,997	— 14,450
	Inter. Ctl. Amer....	794	July, 1952	$1,032,978	— $15,127	30	$7,977,146	— $2,610
	Paraguay Cent. ...	274	3.10.52	G655,920	+ G346,930	13	G8,069,811	+ G3,441,679
	Peru Corp. ...	1,050	Sep., 1952	$9,688,000	+ $1,755,000	13	$28,850,000	+ $4,333,000
	" (Bolivian Section)	66	Sep., 1952	Bs.15,428,000	+ Bs.1,024,000	13	Bs.47,406,000	+ Bs.6,011,000
	Salvador	100	June, 1952	c169,000	+ c81,000	52	c2,068,000	— c49,000
	Taltal	122	Sep., 1952	$3,351,000	+ $902,000	13	$8,538,000	+ $2,234,000
Canada	Canadian National†	23,473	Aug., 1952	19,081,000	+ 746,000	35	147,991,000	+ 12,221,000
	Canadian Pacific†...	17,037	Aug., 1952	12,953,000	+ 866,000	35	100,059,000	+ 7,048,000
Various	Barsi Light* ...	167	Aug., 1952	30,780	+ 8,280	22	169,920	— 21,430
	Gold Coast ...	536	Aug., 1952	253,854	+ 32,678	21	1,434,206	+ 152,894
	Mid. of W.Australia	277	July, 1952	50,950	— 1,857	4	50,950	— 1,857
	South Africa ...	13,398	13.9.52	1,928,112	+ 35,033	24	46,792,632	+ 1,882,595
	Victoria	4,744	May, 1952	2,183,278	+ 229,476	48	—	—

* Receipts are calculated at 1s. 6d. to the rupee † Calculated at $3 to £1